COMMITTEE WORKSHOP

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

In the Matter of:)
)
Potential Appliance Efficiency)
Regulations) Docket No.
)
)
Re: General Service and Reflector)
Incandescent Lamps and Metal)
Halide Luminaires)
_____)

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

WEDNESDAY, OCTOBER 26, 2005

9:09 A.M.

Reported by:
Peter Petty
Contract No. 150-04-002

COMMISSIONERS PRESENT

Jackalyne Pfannenstiel, Presiding Member

Arthur Rosenfeld, Associate Member

ADVISORS, STAFF and CONTRACTORS PRESENT

Tim Tutt, Advisor

Gary Flamm

Jonathan Blees

William Pennington

ALSO PRESENT

Chris Calwell
Ecos Consulting

Bill O'Connell
Osram Sylvania

Ted Pope
Energy Solutions

Dale Work
Philips Electronics North America Corporation

Joseph G. Howley
General Electric

Gary Fernstrom
Pacific Gas and Electric Company

Steven Nadel
American Council for an Energy Efficient Economy

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Department of Community, Trade and Economic Development
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ALSO PRESENT

Robert Erhardt
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Stan Walerczyk
Lighting Wizards

Tom Harding
Venture Lighting International

I N D E X

P R O C E E D I N G S

9:09 a.m.

PRESIDING MEMBER PFANNENSTIEL: Good morning, all. This is the Energy Commission Committee workshop on some potential appliance efficiency regulations to do with lighting.

I'm Commissioner Jackie Pfannenstiel; I'm the Chair of the Commission's Energy Efficiency Committee. To my right is Tim Tutt, my Advisor. And to Tim's right is Commissioner Rosenfeld, the other Member of the Energy Efficiency Committee.

I think with no other opening remarks than that I will ask Gary to start the program.

MR. FLAMM: My name is Gary Flamm; I am the Lighting Program Lead for building and appliance standards. And I welcome everybody to this workshop.

There is a copy of a staff report. I hope everybody has gotten a copy of that. If you don't have a copy, there's a copy out on the table.

There's a sign-in sheet, there's actually two sign-in sheets, and we apologize for that. One is to get past the security guard, and

the other is right on this table out here. And if

you could staple your business cards, if you have one, to that document it would help us to understand who was here for this workshop.

I was hoping Bill was going to be here, as far as where we go from here. And I'd like to save comments on that. What I would like to propose is that in the agenda, that we go through the workshop -- or the draft staff report as it is in the same order that the lamps are listed. You've got the general service incandescent, followed by reflector lamps, and then followed by the metal halide luminaires.

So with that, I believe that Chris Calwell from Ecos is going to make a presentation.

UNIDENTIFIED SPEAKER: Do you want to provide any other standards background before that?

MR. FLAMM: What I believe needs to be presented is where we go from here. And I was going to look to Bill for that. We need to, after this, initiate a standards proceeding. So there's going to have to be several notices and the whole proceeding. And there's not been agreement amongst the Commissioners when all of this is

going to occur. So, it's kind of premature to say

when this is going to start.

So, with that, I would like to just jump in and start talking about the general service incandescent lamps.

MR. CALWELL: Okay, that sounds fine. Looks like this microphone is working. I guess it would make sense maybe to dim the lights a little bit for clarity of the presentation.

And I apologize, I can't point to both screens at the same time, so I'll use the larger one here. And by all means, stop me if you have a clarifying question, and then we can talk a little bit more afterwards.

So, my name is Chris Calwell; I work with Ecos Consulting. And we're here on behalf of PG&E to talk about proposed changes to the tier II general service incandescent lamp standards.

And let me just do a quick review of development so far. This it not, by any means, comprehensive, but I think it will give you a general idea of where we've been.

The original proposals for tier I and tier II levels for general service incandescents were made in a series of codes and standards

evaluations report by PG&E and Ecos in 2003, with some modifications in 2004.

The California Energy Commission did adopt the tier I levels largely as proposed in December of 2004, but without modified spectrum bulbs; and most importantly, a deferred discussion on the tier II levels, as many of you know.

The PG&E and Ecos team then proposed a modified tier II approach using what we refer to as steps, a suggestion that Tim Tutt had first made. And the idea was to set a fixed wattage level below a range of lumens at the most common lamp wattages. So, 60, 75, 100, 40, 150, et cetera.

That occurred then in the spring and summer of '05. NEMA proposed what we call an extended steps approach to tier II in the late summer of '05. It basically widened the steps in both directions. It omitted some wattage ranges at the low and the high end, and it also omitted the modified spectrum bulbs from coverage.

You'll see this term show up again and again. I just wanted to clarify. We've been using the term modified spectrum rather than enhanced spectrum for clarity. There's a certain

breadth of spectrum that an incandescent lamp covers, and the bulbs of this type tend to delete

or mute or reduce somewhat the emissions in part of the spectrum. So, modified spectrum may be the most accurate term there.

The CEC then modified the tier I proposal that had already been adopted. And I don't have the date on that because I was on my honeymoon at the time not thinking about incandescent light bulbs. But was that early October, the most recent decision?

UNIDENTIFIED SPEAKER: (inaudible).

MR. CALWELL: Yes, okay, we are almost up to the present here; it was last week. So, CEC modified tier I in October of '05 for soft white bulbs, specifically slightly reducing the stringency of the earlier adopted standard.

So to bring us to the present then, PG&E and Ecos proposed a revised tier II approach, again using steps. Again including the modified spectrum bulbs, but compromising slightly on the wattage ranges and the stringency.

So that's where we are at the moment. Let me take you back, this is a presentation that I gave across the street at our previous meeting

in Sacramento in July of '05. And I just want to refresh your memory with sort of the landscape of the discussion.

This is a chart comparing the lumens to the watts for a range of incandescent lamps that we had first researched in 2003/2004. So, older data, but a consistent data set with what we've been using originally.

So what you see here is the original tier I line for soft white lamps. And then the proposal that Ecos and PG&E had first made for steps for tier II, and how that compared to the previous proposal for tier II, which was simply a straight line shifted to the right from the tier I.

So what you see here, just from a conceptual standpoint is that the steps more or less straddle the original line. In some cases they were more stringent than the original line, that is to the right. In some cases they were a little less stringent. But they maintained a reasonable distance away from tier I. Why? Because if they were to stay where tier I was then tier II would not represent an improvement in efficiency. It would represent for those bulbs

staying where the tier I line already asked them to go.

So this is the original proposal in

2005. As I move to later graphs you'll see two things change. New proposals will come in, but more importantly new data will come in, because we went back and looked at all the current models available from the major manufacturers.

So, in the summer, as I mentioned before, NEMA had made a counter proposal that was also involving steps, but of a different shape. So, I've taken all the data off and just tried to simplify it here so you can see what's going on.

Notice that the steps are broader this way. Broader, both to the right, which is higher efficiency, but also broader to the left, going all the way back to the tier I line and paralleling it for periods here, here and here.

Then there's one other discussion point on here that I won't dwell on too much, but NEMA had proposed this blue line as a tier I. The yellow is the original tier I for soft white. And the Commission's final resolution was more or less in between those two. So that's the NEMA proposal for soft white.

And -- yes? Jonathan is usually sitting at a mike, so we caught him in unfamiliar territory.

MR. FLAMM: And we ask everybody to

identify themself because have a reporter here, so when you come up to speak, please identify yourself each time. Thank you.

MR. BLEES: Sorry. Jonathan Blees, Energy Commission. The red -- there are several places on that graph where the red line is almost vertical. Is it, in fact, supposed to be exactly vertical, or is it supposed to be slightly angled?

MR. CALWELL: I'll actually ask the folks from NEMA about that. We just tried to take the equations we were given and plot them out. So I wanted to make sure we plotted what you intended here.

MR. O'CONNELL: Bill O'Connell with Osram Sylvania. The lines are, in fact, supposed to be vertical.

MR. CALWELL: So, do you know -- can you tell me just by looking at, do you think -- have we missed a step --

MR. O'CONNELL: The reason they look slightly angled is because the steps were done in

10 lumen increments.

MR. CALWELL: Okay.

MR. O'CONNELL: It's a graphical thing.

MR. CALWELL: Okay, got it. So, yeah,

basically what we need to do is instead of smoothing the line we just make it have a step jump, in effect.

MR. O'CONNELL: That's correct.

ASSOCIATE MEMBER ROSENFELD: We are all victims of PowerPoint.

(Laughter.)

MR. CALWELL: And Excel in this case, yes. Thanks for the clarification.

So, yeah, they're intended to be vertical; and I'm going to make a note so that we can clarify the chart in the future. And we will, if we need to, we can run it by you, too, and make sure that it's the same.

ASSOCIATE MEMBER ROSENFELD: Chris, I have a question.

MR. CALWELL: Sure.

ASSOCIATE MEMBER ROSENFELD: Art Rosenfeld, Energy Commission. We are indeed all victims of PowerPoint and Excel. You tell me there's a yellow line there, and I guess I believe

you.

(Laughter.)

MR. CALWELL: Yes, and we are victims of projectors, as well. I can try and highlight it again just so everybody can see it. It's

essentially, it runs right below the blue line. And, of course, the farther up you get the more distance there is from the blue line.

ASSOCIATE MEMBER ROSENFELD: But seriously, Chris, are you telling me that -- could you just run through the words again. The invisible yellow line was the original what?

MR. CALWELL: That was the original adopted tier I specification by the Commission. The blue line was NEMA's proposed revision to that. And what the Commission finally adopted, upon revision last week, was a line that fell roughly between those two.

ASSOCIATE MEMBER ROSENFELD: Between yellow and blue?

MR. CALWELL: That's correct.

ASSOCIATE MEMBER ROSENFELD: Okay. So, this NEMA one is actually a little looser than --

MR. CALWELL: Yeah, in effect --

ASSOCIATE MEMBER ROSENFELD: -- a few

weeks ago?

MR. CALWELL: That's right.

ASSOCIATE MEMBER ROSENFELD: Yeah, okay.

MR. CALWELL: In effect this proposal, if it were kept as is, would weaken below tier I

in certain places which I know wasn't intended. So I wasn't really going to dwell on it. But I wanted to confine the majority of the discussion today to tier II, since tier I has already been adopted and revised.

Okay. So that's the soft white proposal. Now, what you see here is the same set of NEMA lines. So let me be sure I'm pointing to the right thing.

Okay, so look for these steps, and you'll see them again in these three places, here, here and here. But not plotted with all the data and a couple of other things.

This is the original tier II proposal that we made. You see it as a more faint gray line. So now you can see how the steps have widened both to the left and to the right.

In this particular case the NEMA step was one watt higher than ours, meaning one watt less stringent. Otherwise they were at the same

height, but they were wider.

And the more important differences I want to call your attention to are just the distance that we were away from the tier I line versus this proposal, touching the tier line or resting on it for large distances. So that's, I

think the key difference.

My colleague, Pete, did some analyses with all the models in the data set. And what you see here is that the original proposal that we made would cause about 8 percent of the available models to qualify for tier II. The NEMA revision would cause about 35 percent of available models to qualify for tier II. So it's a fourfold increase in the number of qualifying models.

And this is the point, Art, that you asked me about before. Yeah, the CEC's adopted tier I is more stringent than the proposed tier II in this range. But that's, you know, past history.

So just that hopefully clarifies the differences between the two tier II proposals as we move toward the topic of the day which is where are we at now.

MR. TUTT: Chris.

MR. CALWELL: Yeah.

MR. TUTT: A question, if I may.

MR. CALWELL: Sure.

MR. TUTT: The increase from 8 percent qualifying to 35 percent qualifying, did you do any analysis of how much of that increase was due

to exempting 150 watt, 25 watt and 40 watt bulbs? I guess I feel that that's probably the majority of it.

MR. CALWELL: Yeah. You will see that in the next slide. We actually have a list of the models, and so I'll show that to you. But you can also eyeball it a little bit by looking on the chart. Anything that's in green it represents models that were added as a result of the NEMA proposal that didn't previously qualify.

So the ones down here made it in because they were below the proposed range of regulation. The ones in here made it due to reduced stringency. And then the ones up here made it due to an exemption in the proposed range.

It's a somewhat more pronounced effect on the clear frosted chart simply because there are more data points. But I wanted to show you soft white first, because it's the bulbs most

people buy and they account for the majority of the sales.

I think, Ted, you had a question?

MR. POPE: All set, you hit it.

MR. CALWELL: Okay. So if we're clear on that one I'll go on to the next slide.

So Tim had asked which models would, in

fact, be affected here. So, from the soft white standpoint here's the actual list of models. And so you can see they're sorted by major manufacturer; and then we list the wattage ranges and other aspects of them.

Some of what comes in is what you would think of as a product already being marketed as lower power, the WattMisers up here. Some of them are more conventional or even long-life bulbs which bring with them an efficiency penalty. So that's the list on soft white.

And we did some further analysis with market data that we have. And about nine of those models were identified as high to medium sellers. Without any attempt to be more specific on exact unit sales. We just grouped them into low, medium and high sellers based on market data.

Okay, so here's the NEMA clear and frost

proposal, which has a similar shape again. And here the lines again are not quite vertical so we'll fix that one, as well. Here's the same proposal now placed against the original specs and the data. I apologize, in this case we've plotted against the original linear tier II proposal. I don't have the same chart showing our original

step proposal.

But if we can just focus on the data for a second, all of these bulbs over here were already prevented from sale by the tier I adoption. So what we're really interested in is how do the steps change the number of qualifying models.

So notice in green you see models that would be added to compliance under the NEMA proposal. In this case we started out with 6 percent of available models compliant. The NEMA proposal would take that to 33 percent. So roughly a fivefold increase in the number of complying models.

And, again, to Tim's question. The ones down here qualified because the range has been truncated, and the same up here. And then the bulbs down through the middle qualify due to a

reduced stringency.

Okay, let's go on to the next one. This is the list of models that make it in. And so here you can see five or six models from Fite, six from General Electric, maybe two dozen from Philips, a full page of qualifying models from Sylvania, which I think is either a testament to the extraordinary efficiency of their products or

their role in crafting the proposal. But it's a large list of qualifying models ranging from -- not too many of the supersavers, interestingly enough. A lot of clear, standard frost and inside frost, and across the whole wattage range.

MR. POPE: And these are just incremental qualifiers, right?

MR. CALWELL: That's right. So, this is the list of products that would not have qualified under our tier II proposal, but would qualify under the NEMA tier II proposal.

And then here are the last of that list from Westinghouse. So a total of 121 additional models.

Okay, so a --

MR. FLAMM: One second, please. Just a point of order. Please do come up and say your

name because the court reporter needs to know who you are when you speak. Thank you.

MR. CALWELL: Thanks. Okay, so here's a summary of the tier II proposal from NEMA. The conceptual approach was that the proposed tier I spec would function for all parts of the tier II spec line except the extended plateaus at 57, 71 and 95 watts, which are designed to encourage

wattage reductions in 60, 75 and 100 watt bulbs.

And so these extended plateaus, they do absolutely help to assure wattage reductions. And that's, I think, a lot of people agreed was a big improvement over the earlier proposal.

But they don't necessarily encourage efficiency gains. And I'll illustrate that point in a minute. Compliance can be achieved by making many existing lamps dimmer, or by improving efficiency with krypton and halogen fill gas. And the strategy of making them dimmer might prove to be cheaper and easier than adding the fill gas. So, we'll come to that in a second with some visuals.

More importantly I think the NEMA proposal would exclude all lamps below 57 watts and above 100 watts from any further regulation

than the already adopted tier I. And it would leave modified spectrum lamps out of regulation. And they could continue to grow in sales.

All right, so let's address this question for a second, of the two paths to compliance. I'm showing here just for example the soft white proposal with its steps. And I've put on there a sample bulb that might be at 75 watts and 1200 lumens.

Notice that there are two ways to go if you're a manufacturer. You could add krypton fill gas or turn it into a halogen bulb, in which case the wattage might drop from about 75 to 70 watts. The light output would stay the same. And you'd get beneath the plateau. That was certainly the scenario we envisioned with the steps, and it makes a lot of sense.

This line, although geometrically it looks longer, this method of compliance is actually easier and cheaper. And we can review the technologies of it in a future chart. But notice that it just parallels the slope of this spec, which it says basically, use the same filament but tune it to be a 70 watt bulb instead of a 75 watt bulb. It will be both lower in power

consumption and lower in light output, but it still makes it beneath this step because the step is so wide.

Does that make sense? Are there questions about that general concept? Because this is not an issue we've talked about before today.

UNIDENTIFIED SPEAKER: Please go to a microphone.

MR. WORK: Just a point of clarity. This is Dale Work from Philips.

Because it's very germane to why we proposed what we did. Do I understand that both of those black dots would save the same amount of energy? Which is what we're after.

MR. CALWELL: They would both save the same amount of energy. But the one to the right would be an efficiency gain; the one to the left would be a loss of amenity or performance or service. That's correct.

MR. TUTT: And, Chris, there's a third option which isn't shown on your chart, which would be basically moving to the right to comply, adding lumens but at the same wattage. And we've been -- one of the reasons for the steps was to

try prevent that kind of a compliance option.

But you haven't analyzed that in this particular structure?

MR. CALWELL: Well, it could be shown in a similar way, yeah. So what could happen is you could shift to the right, either with a reduction in wattage, flat wattage, or a slight increase in wattage.

So remember that you've got to just get to the right and below the line. So, yeah,

there's strategies this way, this way and this way that might comply, as well. It's a little tough to analyze precisely, and I've put this up as an example. But if, you know, the Commission and PG&E wants, this is something we could look at more thoroughly. And I've asked my colleague, Pete, to look at some real data and see how far the wattages and the efficacies need to shift in order to clear the line.

So, this is simply a phenomenon that I observed last night on the plane, and wanted to call it to your attention.

So, let's look at examples of how that might work. This is a chart many of you have seen before. We use the equations in the lighting

handbook to calculate different combinations of lumens and watts and light output -- I'm sorry, lumens, watts and lifetime that are all achievable with similar technology. And that's the curve you see here in red. Different levels of lumens and a different total cost of ownership, depending on what power consumption you get, how many lumens it puts out, and how long the bulb lasts.

And then we looked at an equivalent curve for similar light bulbs that have krypton in

them. So we were always assuming that what would happen in the spec is a bulb that's sitting at this point right now would get krypton in it and move to this point right here.

And with that, you can see, by going from current to point D, you can see 840 lumens remains 840 lumens; 60 watts drops to 55; efficacy goes up a little bit; lifetime stays the same; and the total cost of ownership drops by about 70 cents.

The other option that could certainly happen is that manufacturers could move backward on this curve. Backward on the curve meaning that total cost of ownership actually goes up. But there is a power reduction; it's just that the

power reduction is accompanied by a light output reduction. So you get less service in terms of dollars per million lumen hours.

And there's some evidence for the fact that this kind of thing occurs already for a variety of reasons. Here is a 60 watt light bulb that puts out 865 lumens. Here's another on that's 840 lumens; here's the miser, or the efficient version which, yeah, it does save 5 watts, but we gave up 40 more lumens of light output. Here's the very long life version which

doesn't save power at all, but gives up another 80 lumens -- I'm sorry, 60 lumens from the basecase right here. Here's the modified spectrum bulb and here's the halogen bulb.

So, there are a variety of bulbs, even from the same manufacturer, that cluster around the same wattage, but with widely varying light output. So it's a phenomenon practiced today.

Let me then turn from all the past discussion analysis just to summarize the proposal that PG&E and Ecos had made to the Commission, and that I think brings up to the current date.

We accepted the notion of excluding the lowest wattage bulbs from consideration. But in

that case we propose that it be the ones below 35 watts. They truly are low sellers.

But the 40 watt and the ones above 100 actually sell a fair number. And the savings that would be foregone by excluding them is substantial.

We tried to insure that the step heights would reflect the efficiencies achieved by krypton and halogen technology. So there is, in one case, a minor difference from NEMA's proposal on the step heights.

More importantly, I think it would be important to insure the step widths are reasonable and do not come too close to the already adopted tier I line. And so we moved it over slightly. As I've thought more about this issue of the dimmer bulbs I'm not sure it's moved over far enough. And I'd like to encourage some more consideration of that. So that's why I noted more analysis possible revisions needed here.

And then lastly, it's important to insure the ramps don't come too close to the already adopted tier I line because there would be no additional savings for models that fall in that part of the curve.

So, here's what that looks like. Let me just say at the outset that there are two important characterizers of the numbers. First, Pete answered the question for me, what percentage of the models would qualify. That's 18 percent.

So, it's a bit higher than our earlier estimates. Let me take you back so you can see that. The original soft white proposal we made would allow 8 percent of models to qualify. NEMA's was at 35. So we tried to land in the middle between those two and suggest something that had about 18 percent of models qualifying.

Perhaps more importantly, since all of these models over here are already prevented from sale by tier I, we asked the question, well, how many of the models that are allowed to be sold under tier I would qualify. And that's 25 percent.

So, anything else I want to point out on here I guess is just the red bulbs constitute ones that are below or to the right of the line and would therefore qualify.

This line in this region is shifted to the right of the adopted tier I by a single watt. And my supposition is it might be better to shift

it a little more to the right if you're concerned about the notion of bulbs like these could qualify either by going down here, or by going this way. It's a little bit easier to see here.

ASSOCIATE MEMBER ROSENFELD: Chris, could you -- the single watt applies, all the steps come within one watt --

MR. CALWELL: Well, the easiest way to see it, Art, is you can look at the blue line here, it's sitting one watt horizontally --

ASSOCIATE MEMBER ROSENFELD: Also, --

MR. CALWELL: -- or one watt vertically,

I'm sorry, from --

ASSOCIATE MEMBER ROSENFELD: Also where the steps nearly touch.

MR. CALWELL: Yeah. And these steps don't, they never exactly touch the tier I line, which in the NEMA proposal they did. That's the other difference, yeah.

So, then let's look at the frosted and clear. Again, the proposal causes 18 percent of all models to qualify. But about 35 percent of the models that already meet tier I would qualify here.

And you notice again we have a lot more

data points, but one of the things that happens is this thing cuts off at 35 watts. So we pick up a bunch of the qualifiers down here, and then a few more at each of the other wattage ranges that represent the more efficient of the models available.

So, here's the modified or enhanced spectrum proposal. And it remains unchanged. It's the one that the Commission has seen before.

Then the final thing I did, and I appreciate the -- one of the most important insights I gained from our previous meeting with NEMA, and it's just simply not something we

thought about before, is that general service incandescent lamps are likely made in wattage families.

In effect, you know, there's a base model with a filament and a fill gas. And it's designed to consume a certain number of watts. And then depending on what covering you put over that, there's going to be changes in the number of lumens produced.

So one of the things we tried to do in these new proposals was insure that the step heights were the same in every case. And what

differs is how many lumens are allowed. And that's consistent with the industry's request that it be allowed to make common wattage families of bulbs.

And with that, I will conclude. Thanks for your time.

MR. FLAMM: Okay, I'd like to open it up for any questions. Commissioner, or Advisors first.

MR. TUTT: I don't know that I have any questions. Jackie or Art?

PRESIDING MEMBER PFANNENSTIEL: I just, because a lot of this, Chris, is new to us, I

assume that this material is going to be in front of us in hard copy sometime soon.

MR. CALWELL: Yes. What I did was copy the presentation, itself, over to the Commission's (inaudible), so that it will circulate to the staff and the Commission after today.

PRESIDING MEMBER PFANNENSTIEL: Okay, thanks.

MR. TUTT: Chris, could --

MR. FLAMM: This information is actually in the draft staff report.

MR. TUTT: -- could you put up one of

the soft white charts again?

MR. CALWELL: Sure. How about this one, the most recent one.

MR. TUTT: Sure. So I just want -- let's look at the 75 watt category, which is that string of bulbs right there.

MR. CALWELL: So, we're right here.

MR. TUTT: Right. And as you move further to the right in that category you have more lumens for each -- for the 75 watts, correct?

MR. CALWELL: Correct.

MR. TUTT: I'm looking at that and I see a bulb which is barely not compliant with the tier II proposal, right there.

MR. CALWELL: This one here.

MR. TUTT: Now, for that particular model, probably the easiest thing in speculating would be for it to stay at 75 watts and move slightly to the right.

MR. CALWELL: That's correct. I mean that would be my assumption. It may be the coating could be made slightly less opaque, --

MR. TUTT: Correct.

MR. CALWELL: -- a small amount of fill gas added, something like that.

MR. TUTT: Let's take the next model to the left.

MR. CALWELL: So we're looking at this one.

MR. TUTT: In that one, looking at the two arrows that you were drawing earlier, it would be probably easier to move straight down potentially than to move over, or maybe not, I guess.

MR. CALWELL: Well, I do want to clarify one thing if I haven't already. The distance that you have to move on the curve horizontally and vertically is not a measure of ease or difficulty or cost.

And the reason is that there's different approaches that cause each thing to happen.

MR. TUTT: Correct.

MR. CALWELL: The diagonal movements downward I am proposing would be the cheapest because they do not require the purchase of krypton gas, which costs more than argon.

MR. TUTT: Correct.

MR. CALWELL: Whereas if you're going to increase the brightness at a fixed wattage, you essentially have to improve efficacy --

MR. TUTT: Correct.

MR. CALWELL: -- at some cost.

MR. TUTT: Now, I guess what I'm getting at is as you go further to the left, but still compliant with tier I, you get to a point where the --

MR. CALWELL: Maybe in here somewhere.

MR. TUTT: In there -- it's more difficult to simply dim the bulbs because by doing so you're no longer compliant. You can't achieve compliance; you don't get behind, below that line.

MR. CALWELL: And all I would say is that any lamp that is close to the line would follow your scenario as long as the steps don't touch the line. Right. If the steps get too

close to the line -- maybe I'll just try to point it out --

MR. TUTT: Correct.

MR. CALWELL: So this range here. As long as the dots are far enough to the right, the more efficient or dimmer strategy becomes available. The farther they get to the left the harder that is to do, correct.

MR. TUTT: Okay.

ASSOCIATE MEMBER ROSENFELD: Chris and

Tim, tell me if I'm right. If you just do the dimming approach, the natural slope is just the slope of --

MR. CALWELL: it's fairly close --

ASSOCIATE MEMBER ROSENFELD: -- of tier I or --

MR. CALWELL: -- to the slope of tier I. I'm not going to represent -- I mean the manufacturers could comment better than me -- it's fairly close to the slope of tier I because that line is a reasonable fit to the data, as a whole.

Let me take you back here. Part of why I drew the angle of this diagonal line as I did was intending to roughly mirror the slope of tier I, yeah.

MR. FLAMM: Okay, I'd like to encourage -- it's kind of lonely at these tables. So if some of the industry folks are going to make substantial comments, or a number of comments, you know, sit next to me.

(Laughter.)

MR. FLAMM: I did shower this morning.

MR. CALWELL: So, Joe and others, I can drop this if you're just presenting from your own materials, I'll leave this. If you have questions

of me I'll stick around.

MR. TUTT: I don't know if NEMA --

MR. BLEES: Before you start could I just ask one question? Jonathan Blees.

Chris, have you done a cost effectiveness analysis of the new proposal?

MR. CALWELL: No. The new proposal is not radically different from the earlier one. In other words, it envisions, for the most part, similar compliance technologies. The wattages that get dropped are similar.

So I think the notion was if we can get some approximate agreement on what the slope and the intercept of the line would be, and further economic analysis is warranted, we could do so. But it's not going to be radically different from

what you've seen.

MR. BLEES: Okay. And then -- anybody who's making a proposal should be prepared to answer that question.

ASSOCIATE MEMBER ROSENFELD: Didn't hear you, Jonathan.

MR. BLEES: Oh, I'm sorry -- NEMA has its own proposal to make, and I'm going to ask them, I hereby ask them if they have done a cost

effectiveness analysis for theirs, as well.

MR. CALWELL: And, Jonathan, I should say one point is worth making. In the original case analysis going back a couple years now, we did, in tier I assume that about half the savings we were hoping to get would be foregone from lamps becoming brighter instead of reducing their wattage. And that assumption largely disappears in this analysis out of the belief that the majority of compliance strategies would be to increase efficacy at fixed wattage.

Now that we're thinking a little bit more about the dimmer light bulb strategy I suspect what I might do if the line stayed exactly as this, is I would propose that some of these savings be taken back, as well.

But, you know, it's a little bit of a judgment call as to what percentage of them that would be.

MR. TUTT: Well, again, Chris, the dimmer light bulb strategy, and then who knows whether anyone's actually going to follow that. It's just speculation. Would still result, as Dale pointed out, in the same amount of energy savings. You just would have -- there'll be less

efficacy in --

MR. CALWELL: Yeah, there'd be lower brightness of the light bulbs. And so it's just really a question of whether the Commission wants, you know, a conservation standard or an efficiency standard, or some combination of the two.

MR. TUTT: Correct.

MR. CALWELL: And that's your call.

MR. TUTT: Correct. And I want to follow up on Gary's suggestion here a little bit, to have people come up to the table. I know that NEMA probably hasn't had much time to look at this particular revised proposal; it hasn't been up on our website very long at all.

I don't know if NEMA has a response to this, but it would be useful, I think, in this workshop to have it a little bit less formal;

certainly have a formal response if you want, Joe. But it would be much more productive, I think, for all involved if we just sat and were able to talk about the proposals at this point.

MR. HOWLEY: Sure, Tim. I think that's where we're at. Joe Howley from GE. We, as you know, just have seen this proposal from Ecos. Within literally, we looked at it last night, and

we looked at it this morning, because we were traveling most of the time between when it was out and today.

ASSOCIATE MEMBER ROSENFELD: Well, you've got to be nice to Chris, he's been on his honeymoon, so.

MR. HOWLEY: Okay.

(Laughter.)

MR. HOWLEY: All right. But that being the case, all things considered we still haven't had a lot of time to look at this.

I will share with you our perspective, which seems to differ quite a bit from Chris' perspective. And our perspective, these proposals came out about a year or so ago. And, as you know, industry had a lot of issues with what was being proposed for tier II originally. Not the

least of which was that we didn't feel it would save any energy, but yet it would cause us a significant amount of difficulty to comply with with regard to redesigning lamps.

And as you saw, by Chris' number, something like only 6 to 8 percent of our lamps would qualify. Which, looking at the flip side, from the manufacturers' perspective, that means 92

to 94 percent of every single product we made would have to be redesigned in some way.

And also, as you can tell by this discussion, we've a lot of decisions to make on each and every lamp. What do you go? Do you go this way, do you go that way? We have to study the economics of each redesign.

This is not a trivial task to even redesign one lamp, let alone 92 to 94 percent of our lamps.

So we came back and another one of our issues was that we weren't sure what the consumer was going to choose. Would they, indeed, choose lamps that would save energy?

And so we first proposed a marketing test centered around the three highest volume lamps, the 60 watt, the 75 watt and the 100 watt to see, indeed, if we lowered the wattage of those

types, what indeed would consumers choose. Would they go up in wattage if the wattages on the packages started going down.

We never got to that actual test, but what we got instead was a reproposal that was a more of a clever reproposal, I will admit, with the steps. That says, what if we create, not a

straight line, but these steps that indeed would force manufacturers for the most part to redesign lamps to lower wattages. And not simply to higher lumens.

And that actually had some merit in terms of how it would work. We think it would actually work to force more lower wattage designs to be developed because the straight line would pretty much have us designing the same wattage, just with higher lumens, what we suspect, that original proposal. So that was a big step forward.

But then we looked at, well, it's still very difficult to redesign every single one of our lamps to meet this proposal. What would give us the highest percentage energy savings for the least difficulty from a manufacturing perspective.

In other words, what lamps could we

redesign that would still give you say 85 percent of the energy savings being proposed, but not have us redesigning 94 percent of our products.

And those products happen to be the high volume products, the 60, 75 and 100. Which is why NEMA centered on these. Because they're our high volume products we still make a lot of lamp types

around 60, 75 and 100. You saw some of GE's lamp types up there.

And it still represents 65 percent of our products. So it's not insignificant. But that 65 percent of our product designs that we'd have to redesign probably represents 85 percent or more of our volume, and therefore the bulk of the energy savings.

By going from that 65 percent up to this proposal which was 82 percent, about 18 percent of our products would not have to be redesigned, many of them, the low wattage niche products anyway, the 25 and 40 watt lamps as you saw. They were all clustered in the lower wattage areas. So very few of our 60, 75 and 100s would even pass the NEMA proposal.

But we're suggesting an approach whereby we have come quite a distance from our original proposal which was we don't think any tier II, and

we believe we've put on the table something that is considerably different than that proposal in going to 65 percent of our product. More than half way; we've met more than half way in terms of our proposal.

Chris' continued proposal continues to

try to drag in a bunch of products which are low volume; they're niche products. Whether you're talking about the hand spectrum or the higher wattage of the lower wattage, these are products that don't have a lot of volume or don't use a lot of energy, one or the other.

The 150 doesn't have a lot of volume; the enhanced spectrum doesn't have a lot of volume compared to the standard. And the 40s and 25s don't use a lot of wattage. So there's less potential there.

And so we still believe that what's on the table here is, you know, we still have the NEMA proposal on the table. And one that we think will get you most of the energy savings. And one that we are willing to do, even though it causes us to redesign a lot of our products. But we think it's more than a fair, more than half-way type of proposal.

The counter proposal by Ecos, again, just to get that last 5 to 10 percent energy savings causes us a lot of pain because it brings a lot more niche products onto the table that are just as difficult to redesign as the standard high volume products.

Each product we have to redesign takes the same amount of engineering time and energy and repackaging. So each one of the niche products that saves very little energy is very painful to us to redesign. And it doesn't really get the state very much energy savings, which we understand to be the goal here.

And so that's kind of just our real initial view of the world, and looking at this just last night and this morning.

PRESIDING MEMBER PFANNENSTIEL: Joe, I just want to make sure I understand some of the numbers. You just said that under your proposal you would end up redesigning 65 percent of your product?

MR. HOWLEY: Right, which is the flip side of Chris saying we're only 35 percent of our products qualify.

PRESIDING MEMBER PFANNENSTIEL: And that's about 85 percent of the volume of sales in

California? Is that what you're saying?

MR. HOWLEY: That's correct.

PRESIDING MEMBER PFANNENSTIEL: And I don't know whether you know this, but relative to the total energy consumption of the light bulbs

sold in California, about what percent of light -- of energy, kilowatt hours of that volume do you think?

MR. HOWLEY: it's probably close to the 85 percent. It may be a little higher because we sell relatively more 25 and 40 watt lamps than we sell 150 watt lamps.

We haven't done that analysis; we haven't had time. But it's in that ballpark of probably 85 to 90 percent of the energy used.

PRESIDING MEMBER PFANNENSTIEL: Now, and again you say you haven't had a lot of time to analyze the new Ecos proposal, but the numbers there would be about 18 percent of product.

MR. HOWLEY: Would qualify.

PRESIDING MEMBER PFANNENSTIEL: Would qualify.

MR. HOWLEY: So we'd have to redesign 82 percent of our products.

PRESIDING MEMBER PFANNENSTIEL: And then

about what percent of volume and what percent of energy sales do you think that might represent?

MR. HOWLEY: It might --

PRESIDING MEMBER PFANNENSTIEL: Yeah, Chris, would -- could --

MR. HOWLEY: -- be between --

PRESIDING MEMBER PFANNENSTIEL: Excuse me. Chris, why don't you just come sit at the table here. I think --

MR. CALWELL: Okay, yeah, let me bring the chart back up because it might inform --

MR. HOWLEY: It might be an additional 5 to 10 percent of energy savings when you add all those other products. Because they're niche products, the low wattage products, they probably represent another 5 to 10 percent on top of our --

PRESIDING MEMBER PFANNENSTIEL: So it's 18 percent of products. What percent of volume?

MR. HOWLEY: In terms -- well, in terms of energy savings, which I think was the question, --

PRESIDING MEMBER PFANNENSTIEL: Yeah, that was the -- okay.

MR. HOWLEY: It probably would -- well, depends how you look at this. If you look at how much of the energy savings you could get based on

the original tier II proposal, Chris is probably proposing something that would be 90 to 95 percent of that potential.

What we are proposing probably would get

you 85 to 90 percent of the way there, but would be something much more manageable from us, so manufacturers --

MR. CALWELL: Commissioner Pfannenstiel, I just wanted to call attention to one other number here that I probably didn't emphasize enough before. All the bulbs that you see over here on the previous conference call with NEMA, they said that in the time available they would delete them from the catalogue rather than redesign them in order to meet tier I.

So that's why we put this information on the screen, which is what percentage of the models that NEMA members intend to sell in California starting in January of 2006, would need to be redesigned or would qualify.

So in this case more than a third of those would qualify. And the remaining two-thirds would be redesigned.

PRESIDING MEMBER PFANNENSTIEL: Yes, thanks, Chris, I did note that.

MR. CALWELL: Sure.

PRESIDING MEMBER PFANNENSTIEL: But then back to Joe --

ASSOCIATE MEMBER ROSENFELD: Excuse me,

Jackie. I just want to -- this seems like a relatively important point. And, in fact, it's the only difference between what Chris has up on the board and what was in the handout that we got.

You actually agree, Joe, that it's 18 percent of all models, but it's only 35, it's up to 35 -- the exclusion is up to 35 percent of what you will continue to sell after tier I.

MR. HOWLEY: Well, we haven't -- I can't say that I agree with it because we haven't been able to analyze that particular aspect.

We first need to look at redesigning or taking off the market, I'm not sure which. I mean Chris made an unqualified statement there that we'd absolutely would eliminate from the market all these products.

ASSOCIATE MEMBER ROSENFELD: Yeah. Oh, okay.

MR. HOWLEY: I'm not sure if we would do that, or we would try to redesign some of them. I'm not sure where they're going to end up after the tier I goes into effect.

ASSOCIATE MEMBER ROSENFELD: So the number we're discussing is somewhere between --

PRESIDING MEMBER PFANNENSTIEL: Eighteen

and --

ASSOCIATE MEMBER ROSENFELD: -- 18 percent and 35 percent.

MR. HOWLEY: Probably.

MR. CALWELL: And, Joe, I was just repeating what NEMA members had said on the previous call, that in the time available you weren't planning to redesign for tier I. But if that's not true, I'd be interested to hear it. It's just not something we've heard from you so far.

MR. HOWLEY: Each company is going to decide on their own, in their own proprietary way, what they're going to do. So I can't comment as NEMA as to what each company may or may not do.

MR. TUTT: Joe, I'd just like to, you know, the NEMA proposal that we're discussing here today came out about a month or so ago.

MR. HOWLEY: Right, September 19th or 20th, yes.

MR. TUTT: And I just wanted to express my personal thanks for making such a comprehensive

proposal in the sense of redesigning some of your major high volume products in these incandescent lamps. I think it was a great step forward and I

think I want to commend the NEMA for that.

MR. HOWLEY: Thanks, Tim.

MR. TUTT: I do have some questions from the discussion we just had here. If you guys were going to redesign, say, your 100 watt bulb to be compliant with one of these proposals for tier II, and it involved, let's just take a, you know, some redesign of the filament so that it dimmed it to come down as a possibility. Wouldn't the same filament redesign apply for 150 watt bulb? That's my technical --

MR. HOWLEY: Right. I mean it's the same amount of work and effort to redesign another series of lamps around the 150 watt in terms of --

MR. TUTT: That's what I'm having trouble understanding. It seems like, I guess I think of these light bulbs, they're egg-shaped, or basically so. You put a different filament in one of them, and I guess the 150 watt bulbs --

MR. HOWLEY: It's not the --

MR. TUTT: -- have different filaments, in general, so --

MR. HOWLEY: Right. It's not the same

design, so it would take a different set of engineers a different amount of time to go into

that product category and redesign it.

And what we're suggesting, I mean as companies we have a limited amount of resources -- I mean a limited amount of engineers and design time and packaging time to redesign this.

And we're suggesting to spend our time and efforts in the areas that could help you most. And also be feasible for us in terms of trying to get this done over the next, I think the proposal is, forget what the year is, but it's not that far out to redesign all these product lines.

And the niche products, or these other products, you know, like -- I assume the CEC is probably going to be open for business for quite awhile, and we may have --

PRESIDING MEMBER PFANNENSTIEL: You never know.

MR. HOWLEY: -- further discussions on those -- you never know.

MR. TUTT: You've heard of the reorganization proposal --

(Laughter.)

MR. HOWLEY: I don't know anything,

but -- but, yet, you know, we're suggesting these other categories, you know, it might be well to

look at those at some point. But let's start where we get the biggest --

MR. TUTT: Understand. I'm just trying to help my nontechnical or lay-mind understand when you make a change to a 100 watt bulb to comply, why isn't it easy to make the same change to a 150 watt bulb. And I get some picture of it, but it's still -- I can see that some people would think well, why wouldn't they just do the same thing to every bulb and --

MR. O'CONNELL: I guess the one thing I want to add to that is that just to make it really clear --

ASSOCIATE MEMBER ROSENFELD: Come on, now. Who are you?

MR. O'CONNELL: Bill O'Connell, Osram Sylvania. If you look at a 100 watt lamp designed to operate on a 120 volt circuit, that is a different coil, meaning a different diameter wire, twisted a different number of times than a 200 watt lamp designed to operate on a 130 volt circuit.

And then when you change the lifetime, if it's 1000 hours or 750 hours, that is again a

of times. Every one of them is unique.

ASSOCIATE MEMBER ROSENFELD: Bill, actually, quickly just a little bit, I mean I get the idea, and Joe's actually pretty convincing. But if you redesign the filament, which is basically the dimming approach, then what you say is completely correct.

If you're going to add more krypton then --

MR. O'CONNELL: You still have to redesign the filament.

ASSOCIATE MEMBER ROSENFELD: -- you still have to redesign the filament.

MR. O'CONNELL: That is correct because adding the gas to the mixture changes the effect of wattage that the filament operates at. And therefore, in order to meet all of our internal and federal requirements for honesty in what the wattage is, we would have to redesign the filament, as well.

ASSOCIATE MEMBER ROSENFELD: Okay.

MR. CALWELL: So, Tim, to your earlier point I think the one element we tried to preserve here from the input that we've gotten from NEMA

before was that there were both fundamentally different bulb types, but there were also bulb types that worked in families where the only difference was the coating over the glass.

So, soft white, super soft white, clear, frost, same filament, same fill gas, different coverings.

MR. TUTT: Correct.

MR. CALWELL: So it wouldn't be fair to say that you're redesigning x percent of your models, but that you're redesigning x percent of the families with that redesign effort spanning to multiple models in those families.

MR. TUTT: Is that correct, Joe?

MR. HOWLEY: Right, but that is why we are proposing the 60 watt family area, the 75 watt and the 100 watt, because there are some efficiencies in design within those wattages.

ASSOCIATE MEMBER ROSENFELD: Yeah, and, Chris, as I understand you, of course it's families. That is the absolute count, it does not involve 200 or whatever models.

On the other hand, the percentage that you're talking about is --

MR. CALWELL: Right, I think it would be fair to say that a handful of the families account

for the majority of sales. And so you would make a redesign effort, let's say, I think the 60 watt soft white bulb is the most popular incandescent bulb in the United States. I think that's right.

And so having redesigned the filament and the fill gas, if needed, for that family, a manufacturer would then be able to extend that single engineering effort to the soft white, the clear, the frost and the super soft white of that wattage.

MR. TUTT: Chris, one of the differences between your revised proposal and the NEMA proposal is the exemption for lower wattage bulbs being larger in the NEMA proposal covering the 40 watt family, if you want.

Did you spend some time looking at that exemption? Would that be something that we should consider, in your mind?

MR. CALWELL: Maybe I'm not sure I totally follow that. So what we had done was the original proposal went all the way down to 25 watts. And that part no longer appears in this proposal.

MR. TUTT: Correct.

MR. CALWELL: So there were three,

roughly speaking, and this is a generalization, there were three exempting families of wattages in the NEMA proposal. Sort of the 25 watt-ish bulbs, the 40 watt-ish bulbs, and the greater than 100.

And so of those three a quick analysis that we had done with some help from Energy Solutions showed that the least important to California's energy savings were the lowest wattage bulbs, the 25 to 35 watt bulbs.

So those are missing from this proposal. The two remaining categories were much more important. In the case of the 40 to 35 because they sell a fair number. And in the case of the greater than 100 because the absolute wattage is so high that the savings you get from each bulb is significant.

MR. TUTT: And when you say sell a fair number, you declined to give any kind of exact numbers earlier, but how many 40 watt bulbs really are sold out there. Because I don't know of any in my house.

MR. CALWELL: Ted, do you want to bring forward whatever you've got. Some of this analysis occurred while I was out of the country, so whatever Ted Pope can share with us from Energy

Solutions would be great.

MR. POPE: Thank you. Ted Pope, Energy Solutions. We had done some analysis awhile back on some sales data in California. And unfortunately the bins were, at that time, broken out in a way that works really well with assessing the situation here.

In the -- using, looking at 2001 data and 2004 data, which data sets are comprised of varying mixes of home hardware, the big box type stores. You know, I think these numbers are reasonably representative of California sales.

But the bin for less than 35 watts has just approximately 3 to 4 percent of total sales in California. The unfortunate thing is the higher bins are 85 to 125 watts, which I presume, based on Joe's comments, are primarily 100 watt lamps. That category has about 20 percent of sales. The above-125 watts has approximately 1 percent of sales.

Again, I don't know what proportion of lamps are less than 100, more than 100, in that category of 85 to 125.

PRESIDING MEMBER PFANNENSTIEL: Ted, when you say percent of sales, you mean percent of

light bulb sales, or percent of energy use?

MR. POPE: Percent of unit sales, light bulb sales, right.

PRESIDING MEMBER PFANNENSTIEL: Unit sales, thank you.

MR. CALWELL: And it's not a percent of dollar sales, interestingly enough, which is what you sometimes get, but a percent of unit sales.

MR. POPE: Yeah. So I think one of the points that comes out of your comment is the larger lamps obviously have larger nominal savings per unit than the small lamps.

MR. CALWELL: I guess the other thing I could say to amplify Ted's point was our particular concern with the high wattage bulbs dovetailed with one of the same comments I know that NEMA had flagged in an earlier --

MR. TUTT: Chris, before you go there, I'm sorry to interrupt, I didn't quite hear what the effect would be on just sort of the 40 watt family. Did I miss that?

MR. CALWELL: Ted had said that the --

ASSOCIATE MEMBER ROSENFELD: If you missed it, I missed it, too.

MR. CALWELL: He said the less than 35

watt bulbs were 3 to 4 percent of the units sold in California.

ASSOCIATE MEMBER ROSENFELD: But he didn't address 40 --

PRESIDING MEMBER PFANNENSTIEL: Didn't have 40 --

MR. TUTT: He didn't address 40 watt bulbs, then okay.

MR. CALWELL: So, Ted, did you have one more bin for 40 to 60 --

MR. POPE: Yeah, sorry. You're right, I overlooked that. Our bin two is 35 to 45 watts. And that market share is approximately -- it ranges, I'm using 2001 data because it's a more complete data set, and that is also a better number, too, but it's approximately 18 to 19 percent of sales.

And again I don't have the data to know whether there is a large occurrence of 40 plus watt, as opposed to 40 watt lamps. So, industry can probably speak to that.

MR. O'CONNELL: I have one question on that data set.

MR. POPE: Yeah.

MR. O'CONNELL: This is Bill O'Connell

again. Is that for all lamp shapes or just a particular lamp shape, do you know? The standard covers A15, A19, A21, et cetera. Do you know if that includes A15 and A19, or only A19? That's an important distinction because of the products that are available.

MR. TUTT: Appliance bulbs, for example?

MR. O'CONNELL: Exactly.

UNIDENTIFIED SPEAKER: Right, refrigerator, oven --

MR. POPE: This does not include those specialty lamps as far as I'm aware. I can double check that, but I think it's basically the main lamp types.

ASSOCIATE MEMBER ROSENFELD: But my refrigerator light is not on a hell of a lot.

(Laughter.)

MR. O'CONNELL: That's true. Yes, I believe these are all medium base --

(Parties speaking simultaneously.)

MR. CALWELL: Yeah, but nor do appliance bulbs account for a big fraction of what's sold at Home Depot, you know, so.

ASSOCIATE MEMBER ROSENFELD: Ted, I'm sorry, I'm still trying to understand your data.

You've now told us 35 to 45 is 18 percent. And then is the remaining bin 45 to 85, that's the huge one? You just didn't give it to us.

MR. POPE: Yeah, so if you look 45 to 85 would be, just to give you raw numbers, approximately 650 million out of 1.1 billion. So that would be --

ASSOCIATE MEMBER ROSENFELD: Fifty percent.

MR. CALWELL: Those are the national numbers.

MR. POPE: Yeah. I'm sorry, those are national numbers. I thought I was saying California, but that's right, those are national.

PRESIDING MEMBER PFANNENSTIEL: All the numbers you gave us are national numbers, not --

MR. POPE: They are national, I'm sorry. Again, this analysis was done for a different reason. We can, you know, if this is crucial we can certainly go back and have the staff's numbers recrunched.

MR. CALWELL: So, Tim, just to recap here then, let's put them back in order. So, starting at the bottom, less than 35 watt lamps were 3 to 4 percent of units. Commissioner

Pfannenstiel had asked before about the percentage of kilowatt hours. Obviously very low because it's both the lowest wattage and a small percentage. That's where this proposal reflected deletion of below 35 watts. It seems like the obvious place to compromise.

The next category up we don't have data that takes us all the way from 35 to 57 watts. We've only got from 35 to 45. But even that subset of the range was 18 percent of unit sales. Would removing that from standards consideration cost the state a lot of energy? Yes.

MR. TUTT: Keep on going.

MR. CALWELL: The top one is the one that we only have a partial set. And, Ted, remind me again, 85 to 125 watts?

MR. POPE: 85 to 125 is approximately 20 percent.

UNIDENTIFIED SPEAKER: You had a greater than --

MR. CALWELL: Right, I'm sorry, excuse me. The top one above 125 was 1 percent.

MR. POPE: Yeah, it's about 1 percent.

MR. CALWELL: And so we don't have what we really want, which is above 100 and below 150.

But it's a couple percent, we might assume, from

the numbers we --

MR. HOWLEY: I think that's an unfair assumption. There's almost no lamps designed that are 105, 110, 115 watts.

MR. TUTT: Right.

PRESIDING MEMBER PFANNENSTIEL: Does NEMA have comparable numbers to this? Or do you generally -- do these seem pretty reasonable to you? Or do they -- do any of these categories seem -- or can you give us more precise numbers if these don't work.

MR. HOWLEY: No, they seem reasonable. The reason we suggested eliminating the 150 watt is one, it's only 1 percent that are sold. And, two, the reason people buy that 150 watt is clearly for the lumens. It's usually people that want to read by these lights.

And a proposal like this would most likely cut the lumens on a light source that is primarily bought so, especially as you get older, you could see. And so we would view this as a niche product that really represents a very small number of lamps, but where it's needed it's needed for the light output.

And --

MR. CALWELL: I guess I'm confused why it would cut the light output. The proposal was to add krypton to the lamps to maintain light output at lower power.

MR. HOWLEY: It could, it could. We could go in several different directions. But it could cut the light output.

But more importantly it's 1 percent of the market. Let's get to the important part of this. It is a very small niche part of a product line.

MR. CALWELL: So, Commissioner, the reason I was estimating that it's more than the 1 percent that covers the part of the range that Ted was able to quantify, is just you can see the count of models that stayed up there. And you get a sense that it's not really -- it has been characterized as 150 watt range, but what it actually represents is anything more than 100 watts and up to 150 watts.

And so it's a smaller percentage of unit sales times the largest power consumption in the group. So it becomes more important as a share of kilowatt hours than it might first appear.

MR. TUTT: I was just trying to get to -- and now I think I have, if the data is sort

of accepted by all, of the categories that the NEMA proposal would cover, which would be 60, 75 and 100 watt. That would be, as I calculate it, about 75 percent of the units, of the market.

MR. HOWLEY: That's probably correct. Or something in that, close to that range.

MR. WORK: Yeah, we could do some math offline, but I think you're in the ballpark.

MR. TUTT: And the one category which -- one of the differences is sort of the 35 to 45 watt category. That's a pretty significant category in terms of sales, it seems like. About another 18 percent, but --

MR. HOWLEY: Right, but lower in wattage, and therefore even though the 60, 75s and 100 represent 75 percent or so of the units, they probably represent 85 percent or so of the total power.

Now, we haven't done these calculations, but this is just, because you're going higher in wattage it makes sense that they would consume a higher percentage of the overall power.

MR. CALWELL: So, Tim, the only other

comment that I had started to make before and just wanted to finish was I think we had agreement from

both sides, the original NEMA comments were particularly concerned about the aging population. And the fact that if anything there could be more need for brighter lamps in the future.

So I think the percentage of market share that greater than 100 watt bulbs represent right now, it's interesting the percentage they might represent in the future as your standard takes effect is also interesting, and it's rising.

MR. WORK: May I make some comments? This is Dale Work from Philips again. I would like to underscore something Joe said, and bring up something that we haven't talked about at all this morning, which I think is the most important thing, and that is will any of these proposals save energy.

I think, despite what Chris said a couple of times, that what we are after here is energy savings, not efficiency gains necessarily. Depends on how the market chooses. We're after saving energy.

One of the things that was very much in our minds when we developed our proposal was how

can we be a partner in trying to save energy. I will say it's our belief, but I'll say it's my personal belief, at least, if the tier I proposal,

that straight line, despite all the work that went into it, and all of the discussions, will probably not save California one watt. That's a terrible thing to say.

I think the step approach is much better. And I think everyone who is going that way is the right. But we still don't know how much energy will be saved.

For example, if on both proposals we have 57 and 71 watts instead of the 60 and 75, how will a customer react when he goes into a store wanting a 60 watt lamp. How many will buy the 57 watts, how many will buy the 71 watt. We don't know the answer to that question.

We've talked about it, and so we made our best guess. That's why we chose the 5 percent limit. We looked at a number of percents. But we don't know that. And I think that no one knows that.

And now to underscore Joe's earlier point. We, as an industry, are opposing redesigning all of our lamps until we have some

market evidence as to will any energy be saved at all.

And so that's one of the reasons that we

chose the three highest volume types and said we're willing to design these most used families; and then let's see how customers vote.

PRESIDING MEMBER PFANNENSTIEL: Thank you. These obviously are the issues that we were discussing a year ago. And I, and I think my colleagues, remain really concerned about that basic marketing question.

I would say it's a two-part question. Part one is given right now, if I leave here and walk into Home Depot and go to buy light bulbs for my house, what am I going to buy. That gives us one answer.

The second part of it, though, that I'm much more interested in is if we decide to really engage customers in the new information, and if we explain to them, and if we advertise to them, and if we package materials such that they understand, such that I would understand that if I want the lumens for my aging eyes, and I'm one of those who does sit under a very bright light to try to read --

ASSOCIATE MEMBER ROSENFELD: I do, too, but it's fluorescent.

(Laughter.)

PRESIDING MEMBER PFANNENSTIEL: Well,

yeah, that, as a matter of fact, is true. And, you know, that's another one of my soap boxes that I won't bore you with right now. But, it really is the question of what can people learn to buy.

I think that the analysis here that we've looked at has the implicit assumption that if you offer the same lumens at fewer kilowatt hours, fewer watts, people are going to do that, because it's an economic decision to do.

And I'm hard pressed to disagree with that. I think that the uncertain factor there is customer knowledge or customer information or customer willingness to believe this information.

We, in America, buy much too much because we're convinced by clever marketing to buy stuff. And we're willing to try new stuff because there are ads on the television that tell us to buy new stuff. And that, in a lot of ways, is not especially enviable, but it is, in fact, I think, the case.

So my question, and maybe it's not

really answerable by NEMA, but the burning question in my mind, if you do redesign these big categories of light bulbs, is there a redesign of the marketing that you would assume would

accompany them?

MR. HOWLEY: Probably would be, would be my guess, that our consumer marketing department would want to launch this new line of lamps, if you will, under a new marketing banner and try to get some traction out of it as a new product sale, in a sense, but one that has some energy efficiency benefits to it.

We don't know, to Dale's question, what the consumer is going to choose as they see these rather odd wattage lamps out there. We're going to try to convince them to buy slightly less watts for what they were buying before. But we don't know what they'll choose.

We also would hope, perhaps, that we could get some help in California from Flex Your Power and that marketing campaign to help us, as well, to try to move these newer, lower wattage bulbs in the market.

MR. FERNSTROM: Can I --

MR. TUTT: Joe, -- I'm sorry, Gary, --

but I think that plan is still on the table of trying to get a combined marketing effort with Flex Your Power and others to get these new lamps out into the market as best as possible.

I think what we ran into this year as we

were discussing that was basically there wasn't a product available. And we had to get out there. And we have to design the marketing campaign with some knowledge of the product that's going to be there, and is going to be able to be marketed.

And so that was a, I think -- but I think it's still in the next couple years that we're expecting to do that.

MR. HOWLEY: Okay.

ASSOCIATE MEMBER ROSENFELD: Gary, I'm pursing this particular route right this minute. I think I want to make remarks on both sides of this discussion, too. And I'm not saying anything new.

On the one hand I'm struck with the fact that people do buy compact fluorescents, and they don't have any idea -- they buy them because they're 60 watts equivalent. They don't object to the fact that they're only 14 watts, or 17 or whatever the right number is.

So I'm only partly sympathetic to the problems of your marketing folks. I mean I think the idea of equivalent of watts isn't all that damned hard to get across.

On the other hand, I will look at Dale

and say, if we can come into a -- if we can do this by steps and force you to redesign a smaller fraction of your blockbusters, high volume sales, and have you more confident before you redesign other things three years from now, I can certainly see you making that argument.

So I'm firmly on both sides of the fence here.

(Laughter.)

PRESIDING MEMBER PFANNENSTIEL: Thank you, Art.

ASSOCIATE MEMBER ROSENFELD: Gary, sorry.

MR. FERNSTROM: Gary Fernstrom, PG&E. I have two or three points I'd like to make. First of all, I am surprised at this term redesign. We're talking about, I think, a small substitution of one gas for another. Maybe in the eyes of industry that's redesign. In my view it's a small change in manufacturing.

Secondly, following up on the point that Commissioner Rosenfeld made about compact fluorescents being represented as a 20 watt lamp that gives you the light of a 75 watt lamp, we see the industry doing similarly with par lamps. So it's not at all unusual to go in and see a halogen

par lamp saying that 90 watts gives you the light of a 150 watt lamp. And people don't seem at all adverse to buying those.

Thirdly, the utilities are happy to work with industry to address the marketing opportunities and customer education opportunities here. For one thing, I think the utilities have the responsibility to try and differentiate between the superior opportunity associated with compact fluorescent lamps in lieu of incandescent ones. And among the incandescent, should we be afforded a better product,the utilities have the responsibility to point out why lumens per watt are important. And we would certainly try to do that.

And lastly, unless I misunderstand it, the Commission has the obligation to adopt cost effective conservation. And we've shown this to be cost effective and an opportunity. So it would

seem to me the Commission is obligated to follow that charter.

PRESIDING MEMBER PFANNENSTIEL: Yes, please do.

MR. WORK: I want to respond really to another question, but on your last one, certainly

Joe Howley presented here in the July meeting that we certainly do not agree that it's economically justified, the proposal. So it should not be taken as an assumption that it's economically justified.

But I really want to comment, if I can, on something that Chris said that has gone unchallenged, and that was an intentional feature of the NEMA proposal. And it again has to do with a confusion between saving energy and efficiency. They're very different things.

It is true that on the NEMA proposal that our horizontal lines go all the way to the left to touch the tier I proposal. That was intentional. That was not an oversight; we weren't trying to slip something by you. Because those plateaus are at levels that save energy.

So, today, for example, we sell a number of 75 watt lamps. We sell a standard life, a long

life, maybe a double life. And those are fair sellers. People buy them, people are willing to take the tradeoff of longer life for fewer lumens.

But what we have done by touching that line is even if it would allow the industry to still sell long life lamps, but only at reduced wattage. And I say that someone who buys a double

life 71 watt lamp instead of a double life 75 watt lamp saves just as much energy as someone who buys a 71 watt standard life lamp instead of a 75 watt double life.

So, the energy savings is identical. It's no accident that we went and touched that line. Because, and I remember my discussion with Jonathan Blees from the August meeting, our side discussion, it's very easy to confuse efficiency with energy savings. The NEMA proposal focuses on energy savings. We want to save California energy because we thought that was what we were chartered to do.

MR. HOWLEY: I have a few other comments, as well, -- mention before. One, Gary's point that the redesign is insignificant, it's only insignificant to companies that don't actually have to do it. Gary, from your

perspective it's insignificant; from ours, it certainly isn't insignificant. It's a fair amount of redesign, redesign of the manufacturing facilities, redesign of the packaging. There's a lot of stuff that goes into it. It's much more complicated than it appears on the outside.

The other two or three points I wanted

to make about curves, the difference really between the NEMA proposal and the Ecos proposal.

One, the Ecos proposal does propose to go down a watt lower than the standard tier I. We're proposing to, at certain points, touch the tier I curve. So going down one watt actually is, we would view that as significant. But that is also an area where there's a difference between the two proposals. And Ecos is proposing to go more stringent even on a 60, 75 and 100 watt proposals.

The other issue is we had originally proposed a tier I line that was 3 percent higher --

ASSOCIATE MEMBER ROSENFELD: Hold on, one second, Joe. Listening to your point, does either you or Chris have a -- I mean the one watt's not a big deal, but does either you or

Chris have an idea of how many models that excludes. Are we really discussing any count that's significant here?

MR. HOWLEY: Yeah, we -- I don't know. I mean we just got this proposal yesterday. And, quite frankly, we haven't had a chance to look at it. That's why I don't know if I should argue this strongly or not. I don't know even if that's

a significant effect on us or not. We'd have to look at this more closely.

MR. TUTT: I'm a little confused. I think I heard Chris say that the plateaus were at the exact same wattage levels --

MR. HOWLEY: Yes.

MR. TUTT: -- except for one case.

MR. HOWLEY: Right. What's changed is the equation, itself, the tier I equation that we were matching.

By the way, we matched our old proposed tier I curve, which was a 3 percent higher curve. As you know, a slightly different, little more stringent curve was proposed. We would presume to change our proposal to match whatever tier I is right now. There was some question about that.

So it wouldn't be, in theory, less

stringent. We're saying in certain areas, though, no more stringent than what tier I is. Because, in theory, we're going to have to redesign to tier I starting next year. Those products won't be available, so they will be redesigned or off the market. So there's no, you know, we could live with that curve where it's at right now for tier I. But moving it a watt may cause us to have to

redesign some products; we don't know yet. We're going to have to go look and see what this one watt reduction in both of those means to us.

MR. TUTT: I see what you're saying. Having the tier II line that matches the tier I slope be a little bit more stringent is what you're talking about, not the plateaus.

MR. HOWLEY: Right.

MR. TUTT: Okay.

MR. HOWLEY: Right, that may or may not affect us.

MR. CALWELL: One of the things we could do there is just simply do the analysis and answer the question, you know. How many of the models are affected by the one watt because they're not near the plateaus, they're in a different part of the curve.

And we were just going off of a, I guess a philosophical question that the Commission would have to answer, do you want tier II to be more stringent than tier I generally? Or simply in specific areas?

ASSOCIATE MEMBER ROSENFELD: And we would all be very happy if it turns out that this particular spat involves one model or something like that. I don't --

MR. HOWLEY: Right.

ASSOCIATE MEMBER ROSENFELD: I can't tell whether to get excited about it or not.

MR. WORK: But I would come back again, we almost slide again to an efficiency argument. And those comments are all on the efficiency side.

We want to save energy, right. Not necessarily only to have more efficient products --

ASSOCIATE MEMBER ROSENFELD: No, we kind of want to save energy. We also prefer -- we're also the energy advocacy folks.

MR. WORK: Yes, and the horizontal line, the long lines allows both to take place.

MR. TUTT: I think that you're correct, our main goal is to save energy. But we do have a

preference in how we do it.

MR. WORK: Sure.

MR. TUTT: We prefer doing it with efficiency as opposed to what's been called in the past, conservation. I mean we could save energy by just telling people to turn out their lights and don't use their air conditioners. That would save energy.

But we want to -- that would also

prevent them from getting as much of the benefits, amenities that they get from energy as --

MR. WORK: Right, but I think, Tim, when Chris was making his talk you had looked at one of the points that was just to the left of the vertical line, and you said why don't they just design over there. And what I wanted to say was we could do that. It would be more efficient and no energy is saved.

MR. TUTT: Correct.

MR. WORK: Okay.

MR. FLAMM: This is Gary Flamm. I want to say something to the point of the efficiency versus saving energy.

You know, we're all looking at a crystal ball as what the customer can do when the

marketing campaign is going to be different for the two different approaches.

The NEMA approach, I think, goes a long way to saving energy. I think it's excellent at doing that. What we would -- the marketing campaign would be do with less, which --

MR. TUTT: We hope not, Gary.

MR. FLAMM: But that -- to have the efficiency, the efficacy and the, you know, getting rid of the bins, the common bins, we would

be able to legitimately tell customers you can get the same lumens for less wattage.

But in the NEMA proposal we can't say that. We can't say you can get the same lumens for the same wattage.

So let's say the choice is 57 or 71, and I'm looking for a 60. I go in shopping looking for a 60. And I try the 57, and it's got less lumens. So then I come back and I use the 71. Because I have some black magic idea what kind of lumen package 60 is going to be. And 57 just doesn't work.

So, to me, how would we market successfully doing with less and saving the energy?

MR. HOWLEY: We're all going to have to figure that out. But as Chris was pointing out before, we can all go in several different directions here. And quite frankly, given so many -- there's three incandescent manufacturers in the room; there's also a lot of importers that bring incandescents in.

And I would hazard a guess that everything will be tried. And we will all figure out what the consumer decides is acceptable. But

there will be bulbs that are brighter, and there'll be bulbs that are longer life, and there will be bulbs that are lower, but within the parameters, in general, they'll have to save energy given where these steps are. There'll be a lot more products available at these lower wattages.

So, really the market will decide where we ultimately end up going with the life- lumens-watts tradeoff, and that's always been the case. And that's the world we live in with incandescent lights.

PRESIDING MEMBER PFANNENSTIEL: I think this is very useful policy discussion. And it certainly is where my, you know, one of my areas

of focus. However, I really want to see now, Gary, are we kind of through what we need to do on the incandescents? Are we ready to move on in terms of the other issues that are here? Are there other discussions, are there other people who have points they want to make on the incandescents?

ASSOCIATE MEMBER ROSENFELD: Yeah, I think I have one last question. You were trying to say something.

MR. WORK: I was just going to correct

one of Gary's -- a point that he made. I believe, Gary, in the NEMA proposal those horizontal lines are sufficiently broad that you can both have the same lumens or more lumens than you have today. Or you can have much longer life, like people have said they want.

I think that the NEMA proposal allows both. It does not restrict someone to not having the same lumens.

ASSOCIATE MEMBER ROSENFELD: Okay, a small question, probably to Joe. I should be more familiar with the NEMA proposal, I apologize.

Let's talk about the low wattage lamps, the 40s and so on. Is your proposal simply to

exempt the 40s for this cycle?

MR. HOWLEY: Yes. For this cycle we'd like to concentrate our resources on the three high volume types, the 60, the 70 and the 100.

ASSOCIATE MEMBER ROSENFELD: So let me ask you a slightly hypothetical question. In haggling this out later, instead of exempting them, looking at the slide over your shoulder, would you instead consider some moving the line slightly so that -- I mean I'm looking at this, it looks like about 15 models are 40 watts.

(Pause.)

ASSOCIATE MEMBER ROSENFELD: There are, what we're discussing is a whole bunch of (inaudible), like about 15 of them.

MR. HOWLEY: Right.

MR. TUTT: Art, you might have to go up to the podium and --

UNIDENTIFIED SPEAKER: That mike over there.

ASSOCIATE MEMBER ROSENFELD: Sorry. So here are something like 15 models which you don't want -- you probably would give up on a few of them or something. But, is there some possibility of coming up with a compromise which, by moving a

line, gives you sort of 80 percent of what you want?

MR. HOWLEY: I guess what I could offer, Art, is that we could go back and re-discuss the 40 watt, and we'll let you know.

ASSOCIATE MEMBER ROSENFELD: Okay.

MR. CALWELL: Art, before you leave, if I could just -- I wanted to make sure this is clear. The range that NEMA proposed to regulate was between 57 and 100 watts. So it's not just the 40s. It's anything in here that sits --

ASSOCIATE MEMBER ROSENFELD: There's

quite a cluster.

MR. CALWELL: Yeah, yeah, the NEMA line stops at 57 watts, and then hits tier I and just goes down. So we're talking about everything down here.

The red ones were the ones that we were proposing to leave out. And you can get a rough count of the dots by looking at them. The gray ones were the ones we proposed to leave in, which is a roughly equal sized number.

MR. STEPHENS: What does the soft white look like --

MR. CALWELL: So let's go back to --

Charlie just asked what do the soft white look like. Here is the same data set for the soft white. And so now you see, Art, these are the dots down here. It looks like about six or seven that we were proposing to exclude. And these are the dots that would stay in; there's about six there, two more there, and maybe another four or five here.

So, really I don't want to leave us with the impression that bulbs only exist in families of 40, 60, 75, 100 and 150. There are a whole range of lamps that fall in between them, and

they're covered by a continuous specification.

MR. PENNINGTON: Could I comment?

PRESIDING MEMBER PFANNENSTIEL: Yes.

MR. PENNINGTON: Bill Pennington; I'm the Manager of the Appliance Standards program.

Another option here that I think the Commission should consider related to the 40 watt lamps is timing. Perhaps if there's some concern with doing the 40 watt lamps right away, that rather than to give up on 20 percent of the energy savings, we might want to consider a later date, effective date for that. And maybe that can be part of what's discussed here.

The transaction costs for the Commission to come back to a new proceeding down the line and re-have all these discussions is considerable. So that's what I would add.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Bill.

MR. TUTT: Point taken. I think with the lower wattage bulbs it wouldn't necessarily be 20 percent of the energy savings. It's 20 percent of the market that --

MR. PENNINGTON: Right.

MR. TUTT: -- we're talking about, the potential.

MR. HOWLEY: But that is worthwhile considering; we'll consider whether maybe a later date to allow us to do those in a different year might be more acceptable, as well.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. TUTT: I think that before we move on we probably should discuss a little bit enhanced spectrum. Because that's another difference in our general incandescent proposals from Ecos and PG&E and NEMA. And so -- we have not talked about that yet, and it seems like we

should.

MR. HOWLEY: As you know, we have --

MR. TUTT: I'm sorry, as Chris calls it, modified spectrum.

MR. HOWLEY: Modified spectrum, yes. As you know we have not proposed anything in this category. We also believe this to be a niche product category. That is, equally difficult to redesign.

With the proposal that's on the table, it appears that it eliminates essentially 100 percent of this product category. So it's much more severe, the proposal, on one level; and it's

seeking to regulate a product that represents a relatively small percentage of overall product sales. And the reason it's small percentage is because they're fairly expensive.

They've been around probably for 20 years, this type of technology. They've never sold more than a few percent of the market because of their expense. It's a very expensive glass or coating that is used. But in our case we use a very expensive glass, neodymium type glass. Just not your common, everyday soda lime glass, which keeps the lamp very expensive.

MR. TUTT: So in keeping with talking about the wattage families where you might have a frost-free or clear, and then a softwhite, and then an enhanced spectrum, it's a different product, in a sense, enhanced spectrum, it's a different glass, and as well as a different coating.

MR. HOWLEY: Right.

MR. TUTT: Whereas the difference between frost-free and softwhite is probably just a different coating.

MR. HOWLEY: Correct. And those products that we're talking about represent where all the high volume is, and represent where all

your wattage is.

MR. WORK: I would just say I think it's consistent with our earlier view that we put forward. Since we don't know how the market will respond, we would come back and say, let's focus on our three high volume types; see how the market responds; and then we can move intelligently going beyond that.

MR. FLAMM: So, Commissioners, -- Gary from PG&E -- on this issue of how the market would respond, PG&E in particular, and the utilities in

general, have discussed some sort of interim rebate program that would facilitate identifying these products in the market in the interim between when the standard is adopted and when the standard takes place.

We haven't discussed this with the manufactures yet because we're not certain exactly how we would structure that. It would most likely be some sort of manufacturer direct rebate program.

PRESIDING MEMBER PFANNENSTIEL: Thanks, Gary. Chris, did you have something you wanted to show here?

MR. CALWELL: Well, Tim was asking the

question about modified spectrum, and so maybe I should devote a little more time to the chart. I kind of breezed through it before. It's the same proposal that's been on the table for a little while. There haven't been counter proposals on ways to modify the line to make it more acceptable, just simply the request to delete it.

So I would say that the plateaus were chosen here because they are the distance below the wattages of currently existing products that krypton would allow a bulb to move.

And so you do see, I'm sorry I left the pointer back there, but you see there's a red dot at the 60 watt range. That corresponds to an existing model that already complies.

MR. HOWLEY: What model is that?

MR. CALWELL: I will find out for you. In fact, I have a spreadsheet. If you give me, you know, till we go to a break and I'll find you the model name and number. But I can't pull it up from the PowerPoint.

MR. HOWLEY: Because that's not a model that -- I don't know, I'd be surprised if any of the major manufacturers made that model. It may be a model from an importer that has a wild claim on it, but --

MR. CALWELL: Okay, we --

MR. HOWLEY: -- it's just hard to believe that --

MR. CALWELL: -- will look. No, --

MR. HOWLEY: -- that would be that efficient.

MR. CALWELL: I appreciate the question. We will take a look. People probably know, the enhanced spectrum, I think, as Joe was describing, it's something that happens in the glass or the

coatings on the glass. So it doesn't restrict what technologies can be used inside the glass to improve efficiency. So it's possible the model you see there is either a halogen bulb or a krypton bulb, I don't know. But I will look.

ASSOCIATE MEMBER ROSENFELD: It may not be all that enhanced.

MR. CALWELL: Yeah, it's another challenge we -- another challenge we've had in this category is that whether you call it modified spectrum or enhanced spectrum, it's pretty tough to rigorously define it.

And the fear is if you don't regulate the category at all, people who want to use the term loosely in marketing would sell bulbs that

are not radically different from what they sell today.

So, anyway, that's the step proposal. Perhaps the more important chart is this one just showing that it was absolutely out intent that the wattage heights would be exactly the same as the other two categories. So the same filaments and fill gases could be employed. And you'd simply acknowledge that the opacity of the glass changes and you're going to give up lumens.

So, I hope this proposal reflects, you know, having listened to the comments we got and tried to move it in a direction that would be easier for manufacturers to respond to.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Chris. Are there further issues, discussions or questions on the general service incandescents? Yes.

MR. POPE: Ted Pope, Energy Solutions. Just real quick. One comment, and I think people already have a sense, but if the 15 percent savings that we might be giving up by going with the compromise from NEMA, if that's, in fact, what the numbers work out to be, based on the calculations from the previous tier II proposal, you'd be looking at savings on the order of 10

megawatts in a couple years when the stock rolls over. So it's not insignificant.

Secondly, I'd be curious if Joe or any of the industry folks gives a quick sense of what the acceleration and market share of these enhanced spectrum, modified spectrum products are. Because just really, anecdotally, I feel like I see a lot of shelf space devoted to them. And I feel like I've heard numbers thrown around that

they're getting into this significant market share. And I understand there's a high price barrier there, but I'm a little bit worried that this product, for reasons Chris just outlined, could become a significant percentage of the market. So, I'd be curious what they have to say about that.

MR. HOWLEY: From a manufacturer to manufacturer perspective we all have our own proprietary way of marketing these products. But they still represent the low single digits in the overall scheme of products that we sell, generally because of the price barrier.

Do we try to sell them? Sure. We, quite frankly, to be honest, we make more money selling these products, and so there's a lot of

advertising that is supported by trying to sell them.

They do have a significantly different color effect. People buy them for the color effect, just like they might buy more expensive wood for their flooring or kitchen countertops. They do it for the aesthetic appeal. And there's a certain market that is not that price sensitive that will pay these.

But most of the market for light bulbs is price sensitive, and they will not pay the money for that product. But it's still a relatively small percentage. And most of that 10 megawatts that was, you know, suggested, probably comes from the 40 watt which represents 20 percent, which is why, you know, we'll take a look at that.

But it's not from these other niche products. That is not where that power savings is.

MR. TUTT: The modified or enhanced spectrum lamps have been exempted from the tier I standards that we've already adopted. Can you help us, or help me, anyway, the definition of modified spectrum in there. Is that sufficient to prevent some of the issues that were just raised

where a manufacturer, offshore manufacturer, whatever, calls the lamp modified spectrum, even though it's say 1 kelvin different from a softwhite or something?

MR. HOWLEY: That's a fair comment. I don't think we wrote the definition with that in mind. But certainly we could go back and revisit that definition for the purposes of tier II to see

if we may want to tighten that up to make sure these are only products that do have a substantial product enhancement to them, and it's not just a marketing game.

ASSOCIATE MEMBER ROSENFELD: Joe, I'd like to pursue that some more. Maybe I'm asking a question which shows that I'm really out of it, but do I understand then that there are no efficacy rules on these modified spectrum lamps at all?

MR. HOWLEY: That's correct.

MR. CALWELL: There are actually no efficacy rules in the United States on general service incandescent lamps at all except for the tier I that the Commission just adopted.

ASSOCIATE MEMBER ROSENFELD: So, I think you're saying something slightly interesting,

which I might encourage you to do. You know, Chris can you go back to the actual data, the one with the famous one red questionable dot?

MR. CALWELL: So this one here?

ASSOCIATE MEMBER ROSENFELD: Yeah. Instead of just exempting them completely should we be doing something which would allow the seven or eight green dots which are there to continue to

be sold, but still have some sort of protection? I haven't thought this through at all, but --

MR. CALWELL: Yeah, and, Commissioner Rosenfeld, maybe this chart just helps to illustrate. I mean you're looking at, in general, a reduction in lumens from modified spectrum bulbs of, this is going to be rough, but it ranges from perhaps 20 or 25 percent down to maybe 10 or 15 percent --

ASSOCIATE MEMBER ROSENFELD: Right.

MR. CALWELL: -- at similar wattages. Tell me if I'm in the ballpark, manufacturers.

And so if this is the range we see in the products we have found so far, there is certainly some use in differentiating among them and not encouraging them to become an overly large share of the total market since they represent a big drop in efficacy when they're sold.

MR. HOWLEY: I understand your question. It's probably something we can consider, as well, allowing all the products that exist today, but somehow placing a line that would not allow any less efficient products to be designed into this category. We haven't considered that at all.

MR. FLAMM: On this issue of modified

spectrum, and I'm not an expert in this area at all; maybe you and industry can help me. But I'm baffled why anyone would want to buy an enhanced spectrum incandescent lamp when they could buy a compact fluorescent that has a very high CRI and a good color temperature, and I would think would do a lot more for enhancing the colors found in residential environments.

MR. HOWLEY: Yeah, unfortunately it doesn't quite work that way. It's like picking colors, like why wouldn't everybody like blue because I like blue, so I don't think orange and red should be sold. We should outlaw orange and red, I just like blue.

Enhanced spectrum has a very different color effect than compact fluorescent lamps. It's different. For some people that means better; for some people that means worse. But it's different.

It happens to enhance reds very well. For instance, if you had it on wood floor or any kind of wood cabinetry or red fireplaces, you'll notice that it really has a rich look to it. The woods and the red and the brick look real rich.

And people like that rich look. You can't get that with compact fluorescent lamps.

You can get a nice look with compact fluorescent lamps, it's just different than enhanced spectrum.

MR. CALWELL: Really, the only reason I was pushing hard for the modified spectrum term is that it enhances reds by subtracting blues and greens. So there are not, to my knowledge, more red -- not more red light being emitted, you're simply emitting less of the other two. So what's left appears to be more red and therefore is dimmer.

PRESIDING MEMBER PFANNENSTIEL: Anything else --

ASSOCIATE MEMBER ROSENFELD: Not accurate --

PRESIDING MEMBER PFANNENSTIEL: -- on --

ASSOCIATE MEMBER ROSENFELD: Your statement's accurate; the light's not accurate.

PRESIDING MEMBER PFANNENSTIEL: Anything else on general service incandescents?

Gary, should we move on?

MR. FLAMM: Well, okay, let's move on to the incandescent reflector. I think all of us on all sides of this issue were hoping to have some kind of closure with this incandescent general service. But it appears that the dialogue is

going to have to continue. And hopefully there's not going to be another workshop, but we'll be able to proceed with this dialogue and eventually submit 45-day language.

I'm sorry, Commissioner, --

PRESIDING MEMBER PFANNENSTIEL: Yeah, I think that that's exactly what my expectation is. I think that we have gained a great deal of -- I certainly have gained a great deal more understanding. I thought the analyses on both sides were revealing.

And I think that we're perhaps closer -- well, we're certainly closer than we were a year ago. I think a lot closer than perhaps I feared.

So, yeah, I think that the next step is to prepare 45-day language.

MR. FLAMM: Thank you.

MR. O'CONNELL: To facilitate that discussion could the NEMA members get a copy of

the presentation that was given by Ecos?

UNIDENTIFIED SPEAKER: Yeah, absolutely. I've given it to the Commission already --

PRESIDING MEMBER PFANNENSTIEL: Yes.

MR. WORK: Yeah, I would say -- disappointment, I would say, to me because when we

met last time you were very specific that you wanted this to take place outside the room. And I know we met our deadline.

But we only saw this other one, I saw it at breakfast this morning. That, I think -- and this is the spirit of what you were asking us to do. And I'm feeling my trip is not well spent for that reason.

PRESIDING MEMBER PFANNENSTIEL: No, I think that -- well, I'm sorry that that did happen. I think that a lot of this information, you know, is coming in sort of real time. But it's valuable nonetheless.

And I am really appreciative of the exchange that took place in this room this morning. I think that both the numbers and the policies have been peeled back somewhat to hopefully allow us, in our 45-day language, to come up with what may be some standards that work on both sides of the fence. That's certainly the

goal that we have in mind.

If we're not there, then, you know, clearly that's part of the challenge that Commissioner Rosenfeld and I have; is we have to make some decisions. And sometimes our decisions

don't make everybody happy. And, in fact, normally our decisions don't make everybody happy.

But we will do what we need to do. I think that the important part of that is that we do it based on accurate information and a full understanding. And this morning has certainly helped us in that.

So, we will be here for the rest of this workshop and other questions may come up that come back to some of the earlier stuff. So I don't think that we have completely left the general service discussion, just for the moment. I think we need to move on to the other items.

Chris, did you have a different --

MR. CALWELL: Joe had asked me a question, I just wanted to get him the data. The unit that we showed as qualifying under the modified spectrum spec that we showed was Westinghouse natural light 60 watt lamp, 2000 hour lifespan, 900 lumens.

MR. FLAMM: Okay, we'd like to now move on to the state regulated incandescent reflector lamps. And to springboard into that discussion I'm going to ask Steve Nadel to bring up a couple slides. And then invite anybody else who has a

presentation or comments to join in.

(Pause.)

MR. NADEL: Just a minute while we do our technical stuff. Sorry, we're having to transfer from one computer to another here.

(Pause.)

MR. NADEL: Okay. At the last workshop we were asked, the PG&E team, on which I've been the lead for incandescent reflector lamps, was asked to work with the industry to see if we can make sense of the numbers, because there was a lot of disagreement about what would happen if standard x or standard y were introduced. And also see if we can try to reach agreement on an actual standard.

So, I've had a lot of meetings with the NEMA folks, the lighting committee. Very much appreciate PG&E's interest and support in helping to move this forward.

As a result we have, I think, come up with a single set of energy-saving projections

that everyone can agree on. We've also come up effectively with two options for the CEC which ultimately will require a policy judgment by the CEC.

Option one is to continue with the original proposal, as proposed in the case study. That is something that PG&E is supporting; and I believe Gary Fernstrom will be talking about that in a few minutes. I know it is also something that the States of Washington and Oregon will be supporting, and they'll be talking, as well.

The other option is something that ACEEE, and now I'm saying I'm wearing an ACEEE hat and not a PG&E hat -- I just want to be clear -- as a result of these discussions worked out with the manufacturers. It was a compromise to add a few extra exemptions and clarifications to significantly reduce the burdens on manufacturers. And I'll let some of the manufacturers elaborate a little bit on that, while having a very modest impact on the energy savings.

A lot of the impetus for this compromise came about in the State of Massachusetts. Last week the Massachusetts Senate passed appliance standards legislation that includes incandescent

reflector lamps. As you may know, Sylvania is based in Massachusetts; in fact, their district is served by the Senate Majority Leader. I think (inaudible) is also based in Massachusetts; just

so happens their district is served by the Senate Majority Whip. So there is a lot of combination of political and technical coming together, and all the sides came together and negotiated this compromise for Massachusetts.

But also one that ACEEE and NEMA are also jointly recommending for California.

So, let me briefly run through what the changes are. The first change, which is something I think everybody could support, is to clarify that B-par lamps are part of the definition of state-regulated incandescent lamps.

When we originally developed the case study our assumption was that these were part of the BR lamps, and they were included. In our work with NEMA they tell us, well, it's debatable whether they are or are not included, but everyone agrees that they should be included. So we recommend that the definition of state-regulated incandescent reflector lamps explicitly mention B-par lamps so that there is no doubt that they can and should be included. And I believe that's

something that PG&E supports, as well.

MR. FERNSTROM: Yes, let me just go on record as agreeing with that.

MR. NADEL: I don't think the nod from Gary earlier recorded in the recording.

Okay, we're recommending a few different exemptions be added. This is the core of the compromise. For the BR-30, the BR-40 and the ER-40.

BR, remember, are the bulge reflectors; they have a little bulge on the bottom. The ER are ellipsoidal reflector, and they are designed for deep recessed fixtures and have basically pushed the light farther out, and don't track -- the fixture.

The 30 means 30-eighths of an inch; that's the depth -- the diameter that you're generally going to be used to in your homes.

Forty is 40-eighths of an inch, so that's five inch diameter. These are a bigger diameter product that are primarily used in commercial facilities.

What we are proposing is that specific exemptions be for 65 watt products, as well as for products of 50 watts and less.

What this means in the case of the BR-30, those are fairly common products now. With the proposed standard, current products fall just

short of the proposed standard. So they have to tweak them a little bit. For example one manufacturer does make compliant products; it uses a silver reflector, a silver-coated reflector instead of an aluminum-coated reflector. They get an extra .1 or .2 of a lumen per wattage; just tweak over the proposed standard.

What we're saying, NEMA and ACEEE, this is a fair amount of expense for very minor improvement in efficiency. People will still sell the 65 watt lamps; it's just going to be at a little higher cost. And it's a significant burden, as some of the manufacturers will talk about, because the manufacturers have to retool for this for effectively no energy savings. So, this will exempt those products.

In the other cases I think the intent is for -- to have some type of complying product that is not halogen. And if we allow a 65 watt, or a 50 watt or less compliant product, these would be much lower wattage than current products, which tend to be 100 watts or greater. But it would allow them to sell something to replace these

products in existing fixtures. And particularly you have a slightly broader beam spread with the

current products than you do with most of the halogen.

So it would be an energy saving product. The energy savings would be about the same. It's a question of whether you go a cheaper, lower lumen product, or a more expensive, higher lumen, halogen product. But both of them you will save about the same amount of energy roughly.

So those are the big changes there. That's one of the key changes.

The other proposed exemption has to do with the R-20 lamps. These are 20 eighths of an inch in diameter; two and a half inches. They're the much smaller lights used both in residential and commercial.

The compromise proposal is to exempt lamps of 45 watts or less. Most of these products are 50 watts now, so basically everybody would have to come down 5 watts. But they'd still be able to sell an incandescent product.

Under the original proposal basically you'd have to meet a much higher standard if you were 40 to 50 watts, which would mean there would

be two options. Manufacturers would come up with 39 watt products that would be exempted. They're

just below. But at a significant lumen penalty. Or you go down to a 35 or so watt, halogen par lamp. Much more expensive; much more efficient.

This says for these particular products we're allowing an energy saving incandescent product.

So, couple of other little minor things. For the ER-30 the current CEC proposal is to exempt 50 watts. We're saying exempt 50 watts or less. If somebody wants to come up with a 45 or 40 watt product, what's the problem here. They were all energy saving products.

And there's one other small change, which I can't remember, Gary, whether you've changed it in the staff report or not. The staff report in July had changed this lowest range to 41 to 50 watts. And we're saying just make that 40 to 50, the same as the federal standard; the same as Oregon; the same as Washington.

We think the change to R-20 lamps, the 45 watt and less exemption much better addresses the problem, and we should just go with the 40 to 50 watts. Gary, what are you proposing now?

MR. FLAMM: I did change that 41 to 40

watts. I would like you to please clarify. What

I put down is that you have something about the less than 45 watts shall comply with an effective date of January 1, 2008. Could you clarify what you meant there?

MR. NADEL: Okay, yes. As we were working with NEMA, you know, in Massachusetts, but also talking about California and other states, they were saying that that gee, this is a major new set of products that they need to develop. We were talking in general about a 2007 effective date.

They said that would be rather rapid for them to come out with this new set of 45 watt products. I think only one manufacturer has it now. So the proposed compromise is for that class only, the standard not take effect January 1, 2008, in order to give manufacturers more time to come up with the product, the product packaging, the product marketing, et cetera. So that was, you know, part of the compromise package, if you will. Thank you for pointing that out, I forgot to mention it.

The final slide I had, we did send in with the comments, a detailed analysis of the

savings. This is one that NEMA and ACEEE worked

on jointly.

In general, the savings, regardless of which proposal, are greater than were in the case study. The reason being some -- as we worked together, we added and we subtracted, but in particular NEMA had some data showing that for a number of products there was a higher proportion of products used in the commercial sector.

The commercial sector has both higher operating hours and a higher coincidence on peak. And those changes for certain product classes resulted in a significant increase in the energy savings, both kWh and peak demand, compared to the original case study. So these are revised with the same assumptions using the new NEMA data on residential versus commercial applications.

What I've done here is we have gigawatt hours and megawatts. The original proposal, and the proposed compromise. The detail spreadsheets describe each of these in detail. But these are the main categories.

For four of the categories the compromise doesn't have any effect on the savings. For two of the categories it's a very small effect, 1 megawatt and 1 megawatt in that. The

two categories where the big significant changes are is in the 65 watt BR-30 category, and in the R-20 category.

In this one what we're saying is if you do have the more efficient 65 watt product, most people will just continue to buy the more expensive 65 watt. But it will result in very slightly higher sales of halogen. Also in some new construction some people may spread the fixtures a little wider. So you do get some savings, about 6 megawatts of savings ultimately.

And then likewise with the R-20. If you allow 40 watt lamps instead of -- I mean 45 watt lamps instead of 39 and 35 watt lamps, there's some savings there.

So those are the two places with the difference. The overall result, it's some -- I don't have the exact numbers here -- it's 7 or 8 percent reduction in savings with the new compromise.

I know one of the things that I was insisting on is we needed to keep the loss savings in the single digits. No 20 percent loss savings; no 10 percent loss savings. And I think they were getting tired of me saying that mantra. But we

ultimately did achieve that, the 7 to 8 percent loss savings.

So, we're proposing this as a compromise in order to move forward. There is some loss savings. I know PG&E will comment on that.

The other issue, and I will let Oregon and Washington talk about this, is it is no longer consistent with the Oregon and Washington standards. Maybe the thing -- should I mention anything about national? Okay.

One thing that we have been talking about with NEMA as a way to detail with the Oregon and Washington situation, is to make this proposal also a national standard. So it would apply throughout the country, all 50 states.

It would therefore mean that Oregon and Washington wouldn't have to revise their legislation, go back to the legislature, which is what they'd have to do, which is, frankly, a bit of a pain.

And in this case, because the standard, for the most part, is closing loopholes in the federal standard, it's not like California and other states have a lot of ability in the future to amend the standard. Because if you tighten

your BR standard a lot, then the manufacturers will just make an R lamp that's almost identical, to meet the federal standard.

Only in the case of the R-20 are we really setting new ground here with the state standard. So, this should be a case where we could work together, hopefully, you know, our suggestion is what CEC support, or suggesting that to get a national standard that would save this energy nationwide and would help address the Oregon and Washington problem, which I agree is a problem.

So I'll throw that out there and I'm sure Oregon and Washington may comment. I know Gary will comment. But that's a brief introduction to what we're proposing.

MR. FLAMM: Okay, thank you. I think the next step should be somebody to outline the alternative proposal. Were you going to do that, Gary?

MR. FERNSTROM: Well, PG&E is supporting the original proposal, so that's not an alternative that we haven't already discussed.

PRESIDING MEMBER PFANNENSTIEL: Do you have comments on the compromise, Gary, or is

somebody going to offer comments on the compromise?

MR. FERNSTROM: I do have some comments and a couple questions of Steve. So, my question of Steve is having reevaluated the difference in savings between the original proposal and the compromise, it looks like ACEEE and industry have given more, and perhaps more appropriate, weight to the commercial use of these products.

Seems to me that in the commercial market with the high cost of energy and the high operating hours there ought to be more attention given to the alternative of CFL R lamps. They give a fairly broad distribution which is the intent of the BR lamps. And save significant energy.

Also one manufacturer has recently introduced a self-ballasted ceramic metal halide lamp, electronic, self-ballasted ceramic metal halide lamp; and we have the induction self-ballasted lamps on the market, as well, that provide a broad distribution.

So, even though the change that we've looked at here reevaluating the presence of these products in the commercial market appears to

reduce the savings a little bit, I would argue that that probably isn't appropriate, because the commercial market ought to be looking at other alternatives than slightly improved incandescent lamps for the many uses we see of them in retail.

Secondly, with respect to the national standard, PG&E certainly supports a national standard for these products. But we think that if the national standard would address what was referred to as the Oregon and Washington problem, it would probably be accelerated, that is the movement toward a national standard would be accelerated, if it were addressing the Oregon, Washington and California problem.

So, we fully support the original proposal staying consistent with Oregon and Washington, having, in effect, a west coast block, which would not only help to meet California's energy needs, but I think would serve to accelerate discussion at the federal level.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Steve, do you have comments? And then I really would like to hear from representatives from Oregon and Washington if they've traveled here to address us.

MR. NADEL: I guess just to add briefly on Gary's first point, I agree that there's enormous opportunities for increased use of CFLs and improved ceramic metal halide and other products, particularly in the commercial sector, but also in the residential sector.

In our savings estimates we factor that in to some extent, meaning if the cost of incandescent reflector goes up a little, how much more would that drive it.

And, in fact, I just looked at the numbers. In that 65 watt BR-30 category most of the savings is actually caused by an assumption that more people will use CFLs. If the incandescent reflector costs 50 cents more, there are going to be some more CFLs saved. That's the big driver there.

For most of the other categories I'm not sure it's going to make that much of a difference. But there's enormous opportunities. I know Gary and the other California utilities have major programs to try to encourage those conversions. And they can and should continue to do those. We totally support them.

MR. FERNSTROM: Well, that leads me to

ask a question about how these savings were calculated. I thought that in doing these analyses we stayed within a particular class of lamps in estimating the savings, rather than estimating to what extent there would be some substitution with other products.

MR. NADEL: Yes, we stayed within classes, but particularly in the case of the 65 -- of the class of reflector 30 categories, we included CFLs. There are R-30 CFLs; and we said this is a legitimate product. And as you tighten up on incandescent, there will be some additional sales in that category.

So we did look at it within a class. You may differ exactly how we define classes, but we've said that's within that class.

MR. FERNSTROM: Okay, so PG&E's conclusion is that the analysis overstates the reduction in savings resulting from the compromise.

MR. TUTT: I'm not sure I follow that, Gary, but I was going to ask Steve, in terms of that point, reflector -- the movement to compact fluorescents, a lot of the savings in the original proposal, in the 65 watt category, were attributed

to that. And those savings are now gone in the proposed compromise.

But we're talking about 6 megawatts and 36 gigawatt hours at most. Is that what you're saying in that chart?

MR. NADEL: That is our estimate now of what the impacts would be, yes. Because that's the result of working with NEMA. You know, they pointed out how they would continue to have a lot of 65 watt products. It would be modest in cost; and therefore we thought we had over-estimated the amount of switching away from that 65 watt category.

MR. FERNSTROM: So let me be clear about the directionality of my statement, anyway. We think that the loss of savings associated with the compromise is greater than is presently being represented. And is more consistent with the original estimate.

MR. HOWLEY: I would add, from NEMA's perspective, that we think that even this 10 gigawatt savings is probably more than what's actually there. So we actually think it's in the opposite direction.

For instance, that 6 watts is really

questionable that was -- the 6 megawatts are

really questionable as to whether or not they really would have occurred. It took a lot of assumptions to get to that 6 megawatts, which may or may not have occurred, which has to do with CFL replacement and other things. Which may still occur under the new proposal, we just chose not to take that because there's a trend towards those lamps anyway. As they get less and less expensive, and more robust and more reliable -- electric rates keep going up.

MR. NADEL: This is not the first time ACEEE has been in the middle. Perhaps Gary and I should switch seats.

(Laughter.)

PRESIDING MEMBER PFANNENSTIEL: Thank you. Do we have others here who came to address us on this?

MS. KLUMPP: Hi. I'm Liz Klumpp with Energy Policy in the State of Washington. And while I'm very happy to be here in Sacramento, where I don't make it very often, and happy to be before the Commission, I, of course, am here out of frustration. And so I want to thank you for the opportunity to provide comments.

And we are here to urge you to stick

with what we consider the original staff recommendation of over a year ago, which, in the staff report, I think is table K4, in the October 21st report that is available here. With implementation dates of January '04. And lowest wattage for products starting at 40 to 50 watt category.

We, in Washington, adopted these standards, along with minimum state energy efficiency standards for ten other products this past spring. And we based the legislation and the standards on those that had been already adopted or proposed by the State of California as of last December.

And it is with a certain amount of frustration to hear NEMA and ACEEE bringing forth an alternative compromise now. No state agency in Washington has rulemaking authority as you do. And what we have in the standards is legislatively adopted.

And while Steve suggested it's a bit of a pain to go back to legislators, I would argue it's a Pandora's Box, though we have a democratic senate, democratic house and a democratic governor

who are keenly aware of global warming and rising costs of energy.

So that's a possibility, but I would argue every time you do that you don't always get what you expect.

I just want to emphasize the two goals when we proposed the legislation and set standards were -- the primary goal was consistency, frankly, with the State of California above all else. And if, because of our power rates, we thought we needed to have a lower standard to make it as cost effective for customers, we didn't adopt it.

Our number one goal was we want to be consistent; we want one marketplace for the west coast; and if that means we can't have as many standards, we won't.

And so the second criteria was that for the consumers, you know, this was the very first time the State of Washington embarked on state standards, so we set a standard of a four-year simple payback to customers. If it doesn't pass that threshold, we won't bring it up. We want these easy; we want them to make obvious financial sense.

So, we resulted in having 11 of your

many standards that we could readily adopt and believe that they would sit with our consumers.

And we did that, and the legislators -- it had a bipartisan support in our state. So I'm very pleased to say that, and I want to thank you and your staff, particularly Bill Pennington and John Wilson, for sharing analysis. It was extremely helpful.

And I want to say that this effort came out of a three-state, west coast effort, which I suspect my colleague from Oregon will reference, too, which was the West Coast Governors Climate Change Initiative.

And out of that we really focused on what can the states do that we will all benefit from consistency among the states. And some of the three notable successes that come to mind for me are we worked on port efficiency. You know, we wanted all the ports to face similar costs in improving the efficiency of the ports. And we wanted to do that as a west coast.

A second one was the State of Washington enacted legislation adopting the California automobile emissions standards. And the third success really was this adoption of some state

minimum efficiency standards.

And so while that's a really recent indication of our ongoing partnerships as west

coast states to try to establish one marketplace, I just want to say that while we do not testify often or even in front of your Commission, we work with your staff and others in the State of California on a regular basis.

You know, I first met John Wilson probably in '91 at USDOE on clothes washer standards. And I'm the Washington State representative to something called the Northwest Energy Efficiency Alliance, where we partner northwest utility funds with California funds and, you know, to a large extent, brought the nation the federal standards that it is adopting in series here.

And while I think the California Energy Commission consistently provides political and technical leadership on promoting energy efficiency and technologies , I see the State of Washington as often providing political support.

So when you end up in a lawsuit over whether you can collect information from manufacturers, we file letters of friends to the

CEC in the court proceedings say, no, this is really valuable, and the value goes beyond the State of California.

When you and others throughout the country are seeking higher energy efficiency standards for air conditioners during the last weeks of the Clinton Administration, we submitted comments not because this product was of particular value to Washington consumers, but because it was of immense value to California, California consumers, and the west coast electricity market.

So, really I'm here hoping for consistency on the west coast. The Massachusetts legislation hasn't actually been enacted yet. And they are dealing with different distributors and retailers. And primarily I'm here seeking consistency.

And I really want to thank you. And I do want to thank all your staff for the years of ongoing excellent work.

PRESIDING MEMBER PFANNENSTIEL: We want to thank you for participating with us. It's very important that we do have this working agreement that we do have among the west coast states.

We have different issues, obviously, among us, but we are all facing global warming, and we're all concerned about moving as effectively as we can.

So, you know, I know that you've been working with the staff and I am gratified that you did pass the legislation adopting 11 of our standards. And this is, I guess, the one of the 11 that is now causing you the frustration and causing you to have to travel to beautiful sunny Sacramento today.

(Laughter.)

PRESIDING MEMBER PFANNENSTIEL: What is your view on Steve Nadel's idea of doing a national standard? Would that resolve your issue of having something in legislation then that differs from California?

MS. KLUMPP: I think my view is similar with Gary Fernstrom's from Pacific Gas and Electric, which is that if the manufacturers and Congress were motivated because Washington, Oregon and California had a standard that perhaps the manufacturers would like to tweak, that there would be a higher motivation to enact federal standards that could go into force by January of '07.

And in that event we would be very supportive of that.

PRESIDING MEMBER PFANNENSTIEL: Great.

MR. HOWLEY: I'd just like to comment that --

PRESIDING MEMBER PFANNENSTIEL: Sure.

MR. HOWLEY: -- the Department of Energy already has a rulemaking active on reflector lamps. They've had it active for how many years, Steve?

(Laughter.)

PRESIDING MEMBER PFANNENSTIEL: That is it's own problem, but --

MR. HOWLEY: Awhile. And if -- the reason it stalemated was because there was a lot of disagreement among the energy groups and the manufacturers as to where this should go.

If the energy groups and manufacturers showed up at DOE's doorstep with a compromise proposal, I have a feeling that this, which is sitting ready to be done right now, would move much quicker.

But it's not that -- we don't need federal legislation. We don't even need DOE to be

interested in the rulemaking. The rulemaking's already started. We just need to go in and tell them, finish the rulemaking, and it would happen in a relatively, for DOE-time, short period of time.

PRESIDING MEMBER PFANNENSTIEL: I was going to say, you are an optimist, Joe, but --

MR. PENNINGTON: Could I ask a question about that? Would this be a negotiated outcome in the rulemaking? Or would they have to go back and reconsider their cost effectiveness analysis and their technical documentation, and reissue their technical documentations and go through public process on taking comments on that? You know, how quickly could this happen?

MR. HOWLEY: I don't know the answer to that question. That could only be answered by the Department of Energy.

MR. PENNINGTON: Is it likely that they would consider --

MR. HOWLEY: But they've already done that analysis --

MR. PENNINGTON: -- a negotiated solution?

MR. HOWLEY: I think so, given our past

experiences with the DOE. They've already done a lot of studies on this, as you know. They already have published a lot of studies in this area.

Whether they felt they had to redo them, I don't know what the answer to that question is.

ASSOCIATE MEMBER ROSENFELD: Bill, I'm going to make a guess. I'm going to make a guess that the negotiations would go because the only things that have probably changed in the last few years are that electricity prices have gone up. And so whatever was cost effective before is probably even more cost effective now, so.

MR. PENNINGTON: So I don't know if there's a precedent for that happening at DOE in a rulemaking where sort of late in the game a negotiated compromise emerges. And that, all of a sudden, carries the day.

MR. HOWLEY: Absolutely. It did happen on the ballast rulemaking certainly that way; where that was stalemated for several years in the '90s. And finally, when the advocates, energy advocate groups got together with the manufacturers they essentially negotiated a final rulemaking and DOE accepted that final negotiated rulemaking on ballasts. Because they had the same

issue where they just couldn't get a compromise.

MR. FERNSTROM: So just a couple of comments. You know, I would agree that it's likely that DOE would entertain a compromise. The question is how quickly would they act on it.

The California proposal might likely go

into effect in mid 2007 if the CEC passes the original proposal that PG&E and the state's utilities put forward. It's possible that DOE would not only entertain, but act, on a compromise prior to that regulation actually taking effect.

So I think all the more reason for the CEC to act on the west coast proposal and have a placeholder that would serve our needs cost effectively. And encourage federal action that would be good for the whole country.

MR. HOWLEY: I would view it as the opposite, that if California did pass this regulation as proposed, they would be seen as leading the effort that would eventually be a national effort. And also cause the least disruption if the California timing was different than the federal timing, which most likely it will be different. But --

PRESIDING MEMBER PFANNENSTIEL: You're

referring to the compromise proposal?

MR. HOWLEY: Right, the compromise proposal would be the more -- would be the better approach to this to take, both encouraging the DOE to follow along, and as well as leading the way for the rest of the country.

MR. NADEL: Steve Nadel adding a comment. In terms of the DOE rulemaking I think it's still at a relatively early stage. I don't recall, they've published lots of analyses, but it is, you know, -- they have done some preliminary analysis there.

Frankly, I think the quicker route and one that has an excellent chance of success is going to Congress and saying, here is the proposed standard. And the reason I say that, I've already gotten a call from the majority staff in the House of Representatives saying, do you have any more consensus standards that we can include in legislation. We did get 16 of them included in last year. So I think we have an excellent chance of going to Congress.

My advice would be, I call it a turtle race. Let's see who is quicker, DOE or Congress. And let's pursue both routes rather than just one.

MR. HOWLEY: Sure, we can do both.

PRESIDING MEMBER PFANNENSTIEL: Ted, your comments?

MR. POPE: Yeah, Ted Pope, Energy Solutions. One more anecdote. I recall, and Steve and some other folks in the room were involved, the negotiated compromise on the clothes

washer standard.

I believe we met and essentially cut the deal in November, December of 1999. And as I recall it, the final standard was basically ready to go in the first month or two of 2001. The Bush Administration actually delayed the formal adoption of it for several more months.

So it was about a year and a quarter, year and a half once the parties could tell DOE, hey, we've got a deal. So that was the timing there.

And I think they did still have to go through some of the basic public process. Even though it's a compromise, they still have to, you know, have the final NOPR and so forth.

PRESIDING MEMBER PFANNENSTIEL: Thanks. You, sir.

MR. STEPHENS: Hello; my name's Charlie

Stephens. I'm a Senior Policy Analyst with the Oregon Department of Energy. I am the staff for the Oregon Department of Energy's appliance standards effort.

(Laughter.)

MR. STEPHENS: It's an honor to be down here in Sacramento again, working with you

directly.

I guess I'm not going to dwell a lot on consistency. I think everybody's talked about the consistency argument.

For the record, I've participated in the federal rulemakings, most federal rulemakings since 1990 with John Wilson or Mike or any of the other CEC Staff that happen to be there.

I am not, for the record, in favor on a blanket basis of federal standards unless they're good and effective standards.

I think for the matter at hand we're sitting around looking at table K-4 because of the federal standard failure, in a way. it was an exemption of a supposed niche product that didn't amount to a whole lot of energy savings that brought us the need to regulate that particular class of product in the first place. And as I go

back and read over the record I get this sense of deja vu. Here we are again talking about niche products that don't really amount to a lot of savings yet.

It makes sense to me what happened. I mean what happened after the federal par standard, par lamp standard, was -- that exempted the ER and BR lamps, is that suddenly they became more

ubiquitous and they're cheap. And their fraction of sales for this particular kind of application, which I'll get into in a second, became a much bigger fraction of total energy use in a recessed can type fixture.

And so here we are trying to establish some sort of a standard for that forgotten class that's grown.

For that reason I'm not very much in favor of that kind of an exemption. I'm a big fan of the notion that what has happened is possible. And as I look back in history I kind of foresee looking at the class of exemptions here that -- I mean it makes sense. If the cost of compliance with a standard, a more stringent standard, is trivial or nonexistence, then there's not much of an argument to exempt a product line.

If there is a cost then it's pretty clear that the exempted products will be the low cost product on the shelf after the standard is passed, which is what generally happens. And these exempted classes will become the low cost product on the shelf because they aren't bearing the increased cost of compliance with the other products. And lo and behold, they'll be more

attractive to purchase.

These products tend to be used, I think it's not fair, at least in our market, to categorize them as commercial and residential. I think it's useful to look at existing commercial, existing residential, new construction residential and new construction commercial, and break it out a little further.

I think we see a lot of these products in existing and new construction residential. And we see a lot of it in existing commercial. I don't think you're seeing a lot of this product in new construction commercial anymore. There really is a trend, at least if there's any lighting design involved at all, toward much more efficient fixtures than the incandescent downlights.

But in the residential market where

these things are provided, these things are provided for use in fixtures that are literally the cheapest fixture on the market, ten bucks at the distributor level for a recessed downlight; six bucks for its trim ring; and, you know, three lamp changes and you've already spent more money than the fixture cost.

And you're also spending a good bit of energy. But you're the consumer and you take what

you were given. You didn't have the choice in the fixtures that put all the ventilation holes in your ceiling. And put this light up there that you tend to replace with whatever is there when it burns out.

So I'm not very impressed with the notion of facilitating of inefficiency of these products. And I'm not very, at all inclined to exempt a whole class of these things that will become the low cost leader in what is a largely nonchoice market for many consumers. They did not pick the fixture; they did not pick the lamp; but that's what they have.

That's true, also, in speculative commercial market for the lower end new construction area, too.

So I'm really very much relieved by the appearance of table K4 right not because it's consistent with what we are familiar with. And I am very much in favor of option one when it comes to any exemptions. And I'm not in favor of option two. Nor am I in favor of the federal standard that might come to have all those same exemptions in it, either.

I can't find a rational reason for those

exemptions. We've faced with an option one which says that you might not get the energy savings from the list of products that are exempted in option two. Or we could pick option two where you're certain to get no energy savings. I think in that case I'll take the option of maybe getting some energy savings over the certainty of getting none.

And I'd like to stick with our current regulations.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much.

MR. STEPHENS: Thank you.

PRESIDING MEMBER PFANNENSTIEL: Are there other responses or questions?

MR. TUTT: I have a couple of questions.

PRESIDING MEMBER PFANNENSTIEL: Go ahead, Tim.

MR. TUTT: Charlie, I'm trying to confirm my own understanding which is muddied by not being there through all this, and not necessarily having a history in it. But when the federal standard exempted 65 watt BR lamps, the common product out there was a 75 watt R lamp.

And as a process of then the industry moving to this previously niche product, in effect

there was 10 watts per socket saved in a significant amount of sockets, is that an incorrect understanding of what happened back then?

MR. STEPHENS: I don't think it's a full characterization of what happened. I think the lamps didn't exist, but I think the response of the market was a price response. It was basically to move to a lamp that, yes, it used fewer watts, but it was not -- it's not a great choice --

MR. TUTT: Not more efficient, not a great choice.

MR. STEPHENS: It didn't put out any more light, you know, it didn't put out the lumens. I guess they must have reasoned that the

consumers could do without the extra lumens. But the product essentially didn't exist before it was exempted in most manufacturers' catalogues.

MR. HOWLEY: I'll comment on that. That we did have a 65 watt WattMiser product in the market since the late '80s. So it did exist. It did not sell as well as the 75 watt, which clearly was the market leader.

We tried to sell them on the basis of energy savings. It was more expensive. It had a

different reflector. The BR stands for bulge reflector, which is a special additional reflector design that tends to concentrate the light a little bit tighter straight down so that the overall light output on your countertop, let's say, is the same with the 65 or the 75.

And in a sense, the 75 was throwing a lot of light into the sides of the fixture that were getting trapped. This reflector allowed it to get out of the fixture more efficiently and have the same light output.

So, there was benefits to it. And we were selling it. But when the federal EPAC came along, in our view has regulated it, not exempted it. We certainly didn't feel like we'd got an

exemption. We had to move our whole entire product line to the 65 watt which existed, and eliminate the 75 watt. And so it very much felt like a regulation to us.

And it saved a lot of energy. I don't know how many sockets there were, but every socket there was a 75 watt, all of a sudden there was a 65. And on the high end where there was 150, there were now 120s. So there was a significant amount of national energy saved with the way they ended up regulating the reflector lamps back then.

MR. TUTT: Help me with the proposed option two. What similar effect can we expect, if any, from proposed option two? What I see in proposed option 2 is the standard model in places of 65 watt BR; 30 in many cases. And that model would still be sold.

MR. HOWLEY: Right. Because the 65 watt would be redesigned to still exist. In fact, you know, to meet the efficiency levels, because it's just barely below it, with adding silver and some other things you can get it to meet that, which is the typical route that manufacturers would take.

It's all the other products where the energy savings comes from. Industry did not agree

to this without a lot of arm-twisting from Steve. But there were several products we did not want to see eliminated, but are going to be eliminated under this proposal, including the 120 watt R-40, the 120 watt ER-40, the 75 watt ER-30, the 75 watt R-20, the 50 watt R-20. Perhaps what we should have listed is all the products that are going away.

And the only way you're going to be able to meet that is either provide a halogen lamp, in fact it's just going to be less consumer choice.

They'll have a choice of a more efficient halogen lamp on many many of these types. Or it will have to reduce their wattage.

In either case the state saves energy. So as you see at the bottom there, the energy savings is approximately equivalent to what was proposed before, but it's done in a much more intelligent way from our perspective with regard to how it treats the lamp types.

It goes further than we want it to go, but in a spirit of compromise we went fairly far with this.

MR. NADEL: You go, and then I'll add.

MR. FERNSTROM: Well, I was just going

to make one more quick statement on the issue of consistency. We not only try and share our energy programs with the Pacific Northwest in California, but we also share a lot of electrons.

So this whole thing feeds back with respect to the supply of electricity and its cost.

MR. NADEL: I wanted to get back to the issue of exemptions and whether we're creating more loopholes. I think this is different than before. And I say this as the person who negotiated the original agreement; and am chagrined at how this got exploited. So I've been

doubly careful every since to say how can these things be exploited.

I think we have two different categories. One, we have the 65 watt BR on the proposal; option two we're saying exempt it. But under option one it's still going to be sold. It's just going to be 50 cents more expensive, and .1 or .2 lumens per watt more efficient.

Absent changing the federal standard there will still be a 65 watt BR lamp. We just can't get away from that.

For the other categories we got smarter, instead of just exempting the whole category

regardless of wattage, you can't use any more than 65 watts. And since most of these products now use 100, 120 watts, we're getting enormous energy savings. And effectively they're going to be the same, if not even lower wattage than the halogen. It's a question of how much do you want to pay versus how much light output you get.

But in terms of energy use I don't think we're exposing ourselves to, oops, here's a major new loophole and we're going to use more energy than we expected.

MR. FERNSTROM: But, Steve, we may not

save as much as had hoped if we go with the compromise proposal versus the original one.

MR. NADEL: I mean I gave my estimates and there was a small difference in energy savings. But I think, you know, I'll stand by those estimates as opposed to saying, oops, gee, is there something else going on here.

PRESIDING MEMBER PFANNENSTIEL: Are there further questions? Other discussion? Other issues?

Bill.

MR. PENNINGTON: I'm curious how much of a problem it would be either to Washington and

Oregon or to the manufacturers to expect that the Washington and Oregon standards would stay in place and would not have any challenge by manufacturers and would stay there until there was a national standard changed them.

So, does that help you any with that thought?

MS. KLUMPP: I'm not entirely sure what you're saying.

MR. PENNINGTON: Well, certain --

MS. KLUMPP: Do I think our standard will change?

MR. PENNINGTON: No. The question was

instead of you getting pressure to change your standard and having to go back to the legislature and revisit all that stuff because of a bunch of pressure, what would be the problem of leaving Washington and Oregon standards in place, manufacturers not doing any campaign to change them, and, you know, you stay where you're at until there's a national standard that might change it.

MS. KLUMPP: And that's actually what I'm assuming when I come down here, when I do my calculation on how is the political structure of

our state looking, and how much bipartisan support was there for these standards and was there an opportunity 12 months ago to come in a provide comments. Because, trust me, other industries did. We started with 12 products.

So I'm of the belief that our standards will hold. That might be a naive comment, I don't know. I believe they'll hold. And if they'll hold, then either these products don't sell in Washington because no manufacturer is producing them. Or they're producing them, at which point they're available in California, too, for purchase.

So either we're too small and they don't even produce them, at which point our customers go and buy some other product that I suspect is likely more efficient. Or they meet our standards. And that's partly why I have some level of comfort coming to California, asking for consistency, you know. We're not the seventh largest economy in the world, but we're out here. You know, we apparently are, industries buy these products.

So I'm operating under the assumption that our standards will hold. It would be greatly

preferable, you know, and I'm looking at Oregon. I don't know what their situation is, but it would be greatly preferable if we were a west coast effort.

And I personally agree with the comment from PG&E that if California is part of this minimum standard that the movement will be faster if you really want a national standard, the movement and the pressure will be faster to move in that direction.

MR. HOWLEY: I would say from a manufacturer perspective, we did send in commentary to Washington when they were proposing this that we thought it was too early, it needed

further study.

We did the same with New York. New York actually moved it to a study bill. They says okay, let's study this for another year or so to see what we should do.

We didn't get the same kind of reaction from Washington.

With Oregon we also engaged, as well, saying that we were still in the process of talking to California about this. Nothing had been settled. We need more time. Oregon's

response was that we're not in session next year, and we want to pass something this year. But California does not pass this, come back and talk to us when we are in session, which will be 2007, I guess.

And so there's sort of an agreement, actually a letter -- NEMA has a letter saying that they want to talk about this again if California indeed passes something different than what we passed. So we'll probably be talking to them. We could talk to Washington as well about potentials for changing the language to mirror what's happening nationally.

MR. TUTT: And I think that was the gist

of Bill Pennington's question earlier. I mean obviously if we continued on with the original proposal of last year, be consistent with Oregon and Washington, and there would be no reason for them to resist pressure any differently than our -- but if we made a change as a result of this discussion today, or further discussions of this compromise, then there may be some pressure on Oregon and Washington to change.

And I think Bill's question earlier was if that pressure could be relieved --

MR. HOWLEY: By a national standard.

MR. TUTT: -- by a national standard, would that be helpful.

MR. HOWLEY: Right, which would preempt their regulations. Sure.

MR. STEPHENS: You know, Oregon, just I'll throw my two cents in, Charlie Stephens again. Our legislature doesn't meet again until 2007. So I fully expect that there will be a lot of activity in this area going on between today and 2007 when our legislature, which will be a new legislature, maybe or maybe not with a new governor, I don't know -- will happen then.

And the arguments could be very different or much the same, depending on what

happens between now and then. So I think for us it's a little premature to speculate.

PRESIDING MEMBER PFANNENSTIEL: Thank you. I think if everybody has said their piece on this, then we assume that the record is complete on it. And Art and I, in putting out a 45-day language, will work with the staff and, you know, capture the policy that we will recommend to the full Commission.

I think we need to move on, let's have a

time check here. We still need to discuss the potential standards for metal halides.

Let me just say thank you to the people from Oregon and Washington for coming this way and helping us with this record.

I don't know how much or how long or how extensive the discussion will be on the metal halides. It would be, I think, preferable, if we could, to work straight through and finish, you know, if we're going to do so within the hour.

But if it's really going to take longer, then perhaps we should break now and come back and finish after lunch. Gary, do you have much of a sense of that?

MR. FLAMM: I do not believe anybody's

prepared to make a presentation on the metal halide standards. You were going to make one?

MR. ERHARDT: Yes.

MR. FLAMM: Okay. Do you have slides that you wanted to go over?

MR. ERHARDT: Yes, please.

MR. FLAMM: And how many slides have you?

MR. ERHARDT: Four or five.

MR. FLAMM: Okay. Are there other

representatives for the metal halide issue here? I think we can get through it pretty quick. I don't think there's -- representatives of the luminaire manufacturers, I don't believe, are present here.

PRESIDING MEMBER PFANNENSTIEL: All right, thanks. And shall we keep on going? Thanks.

MR. HOWLEY: The luminaire manufacturers send their regrets. They were going to attend when it was originally scheduled last week. They could not change their schedule to come out here this week. Otherwise we would have had some folks out here.

So we have, Bob is the ballast representative. He's familiar with electronic

ballast design for metal halides.

MR. FLAMM: Okay, as Bob sets up his presentation maybe I'll just go over a little -- well, I'm losing some people here.

UNIDENTIFIED SPEAKER: I'm going to be back in one minute.

MR. FLAMM: Okay, I'll time you.

(Laughter.)

(Pause.)

MR. FLAMM: Okay, while the presentation is still getting put up I'd like to just go over how we got to where we are and where we are today.

In December we adopted the tier I, the metal halide standard which basically says that luminaires between 150 to 500 watts vertical lamps shall not contain a probe start metal halide lamp.

And after the adoption when we were fixing some of the definitions and things that we were directed to fix, Acuity brands and NEMA brought up that there's a problem with vertical base now. So we had changed what we already adopted from, we split up the vertical base up and the vertical base down.

And originally all the lamps, this luminaire was supposed to take effect on January

1, 2006. But we pushed the vertical base down when we split them to January 1, 2008. So that was already adopted last week.

And so we're looking now at what we consider tier II, and this was taken off the table for further discussion. And that's horizontal pulse start -- horizontal metal halide lamps. Basically what we said was January 1, 2008 shall not contain a probe start metal halide lamp.

So that's back on the table. And we had a second part, element to tier II which was basically the efficiency equation based on electronic ballasts. We didn't say electronic ballast. But, in addition to not containing probe start lamps, the ballast shall have an efficiency that's equivalent to electronic ballasts.

So that's what we brought back to the table. We did split out -- originally we had all lamps by January 1, 2008, and we split out the horizontal lamps to the smaller wattages taking effect January 1, 2008; but we pushed back the larger lamps, 201 to 500 watts, to January 1, 2009.

Now, I believe that in my misunderstanding of the consultants, I actually have two equations in this table. And I believe

one of them is in error, but I don't know which one that is. And I hope to discover that through this discussion.

So that's where we are right now. And with that, we'll have a gentleman make a presentation for us.

MR. HOWLEY: Gary, while we're waiting I would like to make one comment on the lamp part of

this, the horizontal lamps.

MR. FLAMM: Yes.

MR. HOWLEY: Because there's really, it's two parts. One is we're discussing when the horizontal probe start lamp fixture should come into effect; and the other is we're discussing when electronic ballast should come into effect.

On the lamp question we did survey the NEMA lamp manufacturers and found out that we would have a complete set of horizontal lamps available from at least three manufacturers sometime during the year of 2008.

And because fixture manufacturers had to then incorporate them in designs and get fixtures into the marketplace, we were suggesting a date of January 1, 2009 for the horizontal lamp regulation to go into effect.

Right now, as the draft proposal is, it's suggesting January 1, 2008.

MR. FLAMM: But those are for the smaller wattages. And it was our intelligence earlier that the up to 200 watts were going to be available by 2008.

MR. HOWLEY: Oh, maybe I'm reading this wrong, or maybe I'm looking at the wrong proposal,

but what I'm looking at is the middle table here, Gary, if you know this is the right one.

But this middle table here shows all lamps January 1, 2008. And --

ASSOCIATE MEMBER ROSENFELD: When you say middle table, you middle row?

MR. HOWLEY: The middle row of the table.

MR. FLAMM: Yes, you are correct.

MR. HOWLEY: And if you did break it with the wattages as you're suggesting for horizontal lamps, we probably would be okay with that.

MR. FLAMM: I think that was a Freudian slip. I didn't intend to say that.

MR. HOWLEY: Well, that's interesting --

MR. FLAMM: But we can discuss that.

MR. HOWLEY: -- that's interesting --

that suggestion that you --

(Laughter.)

MR. HOWLEY: -- accidentally proposed actually might be a viable solution for the horizontal lamps.

PRESIDING MEMBER PFANNENSTIEL: I'm sorry, would you explain the converse of the

reverse of the --

(Laughter.)

MR. HOWLEY: Okay, well, there's two things being proposed here. One is for the horizontal lamps, one for the electronic ballasts.

Gary had mentioned that we split the timeline for the horizontal lamps, one for less than 200 watts January 1, 2008; higher wattages January 1, 2009.

In looking at this table those two dates actually were applicable to the proposal for electronic ballasts, not for horizontal lamps. But interestingly enough, if you actually would propose that for horizontal lamps, we probably would find that to be an acceptable compromise, if you wanted to split the wattages that way.

I know you didn't intend, perhaps, to suggest that, but --

MR. FLAMM: Yes, --

MR. HOWLEY: -- maybe that's a suggestion to consider.

MR. FLAMM: -- did you follow that? So, did you want to say something, Steve, before our gentleman from the ballast --

MR. NADEL: Yeah, I was just going to

weigh in a bit and call Liz and Charlie's attention, the State of Oregon and Washington, as well as a few other states, have adopted the horizontal as well as the universal effective 2008.

So if California changes its date, you do get into a, you know, how does this affect other states, or are you consistent with other states issue.

MR. HOWLEY: The only comment I'd make there is there probably will be some products available. The concern is that at least three major manufacturers won't have these products available. And so there will be a very modest selection of products available during that one year.

But for Oregon and Washington they probably will be able to get some products, they just won't be very available yet. And if

California was to wait till 2009 there would be greater availability, more product choices available to them. That would be my reaction to that.

So it's not like the reflector lamp issue; it's just a matter of when will there be a

fairly wide selection of products available from all the major manufacturers.

MR. FLAMM: Okay. Our gentleman from the -- I didn't get your name. If you could go up and introduce yourself and give us your presentation, please.

MR. ERHARDT: I am Bob Erhardt from Advance; and I want to thank you for the opportunity to present to you today.

I apologize; I realize I'm coming in a little late on some of this discussion. It wasn't exactly clear to us. We've been following CEC activities and NEMA, and been hearing reports on luminaire legislation. And we didn't realize that under the heading of luminaire legislation was actually a piece of ballast legislation.

And when we did become aware of the impact of that, we started taking some serious interest. And I'd like to speak a little bit

today about ballast efficiency legislation; it's impact on system efficacies; and the difficulty in implementing such rulemaking.

There's been some numbers out in the field gained from websites indicating that there are possibilities of some significant efficiency

gains to be had. I'm here to say that as NEMA we question the efficiency gains claimed on websites.

NEMA did its own study of member companies on efficiencies of ballasts, and found that while there were some limited efficiency gains to be had, perhaps 4 to 6 percent going from conventional ballasts to even the most efficient electronic ballasts, that the efficiency gains that one might expect from looking at website claims were exaggerated.

We think there's some reasons for this, one of which is difficulty in making these measurements. Most of the equipment out there simply will not accurate measure the high frequency wave forms that are present in some of these highest efficiency ballasts.

From our calculations and from our study, if you compare at the 400 watt level, which is one of the most popular and widespread used system in the market today, you can see that

conventional CWA ballasts, now depending on what lamp, you can have a range of anywhere from 56 to 78 lumens per watt.

If you convert to the most efficient type of ballast, the high frequency electronic,

and I'm going to get to this a little bit because high frequency electronic also has the lowest acceptance level of the light manufacturers in the industry, this only goes to a level of 59.6 to 83.

So you can see that the improvements that you get is much overshadowed by the overall range. If you compare this with other types of systems, halogen. Halogen gets 14 lumens per watt.

So you're taking a system that's already got four times the efficacy, system efficacy. And this is mean lumens; this is not initial lumens. You're taking a system that already has four times the efficacy of incandescent systems that you've spent the first two-thirds of the morning here talking about, and you're trying to impact efficiency, its efficacy to the tune of maybe 4 or 6 percent.

I think one reason people like to look at electronic HID and think that it's the next

thing to go after is the experience with fluorescents. But unlike fluorescent systems where just operating a fluorescent lamp at high frequency you gain 10 percent in lamp efficacy improvement, in a HID lamp there are no efficacy

improvements to be had. And all of it has to come from the ballast, itself.

Also, it seems like an easy thing. We converted the industry from electromagnetic fluorescent to electronic fluorescent. Of course, those of us that were through that experience realize that it took five years to develop reliable fluorescent ballasts.

And these were for ballasts that are significantly less complex than electronic HID ballasts.

MR. FERNSTROM: Commissioners, can we ask questions during the presentation?

MR. ERHARDT: Sure.

PRESIDING MEMBER PFANNENSTIEL: I think it's up to the presenter. Is that --

MR. ERHARDT: Sure.

MR. FERNSTROM: Okay, so my question has to do with not the efficacy improvement of the lamp when driven with high frequency, but perhaps the effect on mean lamp lumens and life of the

lamp. Are there not some benefits to be had in those areas from electronic ballasts?

MR. ERHARDT: Some electronic ballasts can offer an increase in mean lumens. Not all do,

and some actually offer less mean lumens than their conventional electromagnetic counterparts.

MR. FERNSTROM: Okay, so one more question. When you talked about the, I think you termed it limited acceptance of electronic ballasts by the luminaire manufacturers --

MR. ERHARDT: The lamp manufacturers.

MR. FERNSTROM: -- lamp manufacturers. Is that particularly with regard to this 400 watt category, or is that the case across the whole range of different wattage sizes of metal halide lamps?

MR. ERHARDT: ANSI and the IEC have been working on compatibility standards between ballasts and lamps for probably ten years now. There is growing consensus on low frequency square wave electronic ballasts, because they do not have the arc instability issues that the high frequency types can have.

We have our first drafts of -- actually we have an electronic HID square wave ballast

standard proposal that is very near; it's out for comments, and it's very near a vote.

To go with that, though, requires lamp standards to go with this ballast standard, and

the first lamp type -- the first proposals for the first lamp type have just been issued within the last month.

MR. FERNSTROM: So if I understand you right, you're saying these issues are irrespective of the size of the lamps?

MR. ERHARDT: Yes. I will say that in particular for the high frequency types there are -- we have not even a proposal at this time with that in either ANSI or the IEC.

MR. FERNSTROM: Okay, but since the lamp is no more efficacious at high frequency the standards, the efficiency standards that are being proposed here have to do with the electronic ballast, not so much whether that ballast produces a high frequency wave form, or a lower frequency square wave. I mean the ballast manufacturer is free to produce whatever output --

MR. ERHARDT: Yes, but a high frequency electronic ballast is more efficient than a low frequency electronic ballast.

MR. FERNSTROM: Okay, thank you.

MR. ERHARDT: Okay. So, complexity levels. I have a sample on the desk over there of one of our products. It's an electronic HID

dimming ballast. It has over 350 components on it.

Generally I don't think I've seen an electronic HID ballast with less than 100 components. And I think typical numbers are more in the 150 to 250 component range.

Compare this with a conventional system that has as little as six components. Six components that we have been building for 20-some-odd years now or longer, and have a long history with.

Compare this with electronic fluorescents that people like to talk about, and these standard ballasts typically have between 30 and 50 components. Some of the dimming ballasts might have 150 or more, especially if they're -- digital compatible microprocessor controlled. But still the electronic HID generally is at least twice as complex as the most complex electronic fluorescent ballast.

I think people can appreciate that complexity is -- the more complex your system, the

more difficult it is to assure the reliability of it.

This is an example of a 60 hertz

magnetic HID ballast. You can see here, it has a capacitor, it has a magnetic element. Now, this is a reactor, this is actually the simplest type, and it actually has an igniter built into the ballast, itself, here. Other types will have -- a CWA will have two coils on this structure, and a separate igniter circuit. But still the overall complexity level is of a similar level.

Compare that with this is the electronic HID ballast that you have on the desk over there. And you can see, this is a dimming ballast; it has a dimming interface control board here; it has a microprocessor; it has control ICs on the top as well as a number of surface mount components.

Complexity continues to the back of the board, and you can see again a number of electronic components. It has a very detailed layout. And I don't know if there are some people here that have any experience in electronics layout, but given this complexity level and the fact that you have voltages as high as 3500 volts on the other side of this board, peak currents as high as 50 amps, and the IDTs in the thousands of

amps per microsecond. Anybody that has layout background will appreciate the difficulties in

doing a layout of this type.

MR. FERNSTROM: Maybe one more question. You've compared the conventional ballast to an electronic HID dimming ballast. Dimming ballasts are significantly more complex than nondimming ones. So, what might the parts count --

MR. ERHARDT: Yeah, if the dimming -- well, now, on this particular model, this is a microprocessor controlled model, the difference is this control board on top, about 55 components.

There are ballasts that are not microprocessor controlled that could get this, you know, -- I actually designed the predecessor. This is actually 150 watt product. I designed the 100 watt predecessor to this, and our parts count was down around 250.

MR. FERNSTROM: So what does the microprocessor control get you?

MR. ERHARDT: In this particular product it offers you actually -- it offers us programmability. It can operate a number of different lamp sites off of the same product.

The dimming interface allows you to dim

to a 50 percent power level.

If you want to compare this with -- this

is a electronic fluorescent ballast. This is the topology that took five years for the ballast industry to make reliable. And if you go back in history to the mid to late '80s you might be aware, we used to joke about 150 percent failure rate. Because not only did the first one fail, but the one you sent out as a replacement failed, as well.

Not saying electronic HID is as bad as that. But there are stories of 100 percent change-outs. There are change-outs out there. I don't have anything other than anecdotal evidence to present. I was not able to document sites. But I understand that I think there was something up in -- some street lighting up in Canada where they had to go back and conventionally changed out all their ballasts.

The point I'm trying to make is we're not talking about changing a couple turns on a filament here. When we talk about taking this ballast and turn it into this ballast, it takes significant engineering undertaking.

And it's not that the industry does not want to do this. I am an electronic HID guy. I

spent five years with direct responsibility for development of electronic HID product. I've been involved with these products for almost 20 years now.

Our company has one of the most complete electronic HID product lines on the market; and we actively promote them. However, it is a very complex system. The lamp/ballast interactions are very complex. And it takes often two years to get compatibility verified between one ballast type and one lamp type.

And what you're going to find with systems on the market today, even though there might be a wide variety of manufacturers that have ballasts on the market, it is highly unlikely that any of them have confirmation from all lamp manufacturers that they can operate their lamps.

I know we are the -- my understanding is we are the HID leader in the industry in the United States. And we have electronic HID products that we are still getting our approvals from our lamp companies. We have to warranty the systems until we get the agreement from the lamp companies on it.

I started to talk about reliability.

Lamp ballast compatibility takes years to verify.

ANSI standards exist today for conventional systems, and for electronic are years away.

An example of this, I found on the internet what I thought was a rather good study by PIER, funded by the California Energy Commission looking into electronic HID ballasts. In that system of the medium power ballasts three manufacturers supplied them with samples and only one of the manufacturers' ballasts worked.

One did not operate lamps as it was received. And the second one failed during testing. Now, these are ballasts that were submitted by ballast manufacturers to the CEC for evaluation. And two out of three manufacturers' products didn't work.

I think this says something about -- and I'm going to speculate that maybe one of these was one of these ballast companies that also claims 98 percent efficiency. Because it's just, in my opinion, you can't just go by marketing data on what's available in the industry. You have to look at the actual history.

The other thing is verification. I've been developing electronic ballasts for 23 years now. And for 23 years we've been looking

continually at making accurate measurements on our product.

A piece of equipment we use for verifying our electronic HID product costs, I think we get it for $18,000. But I think we also buy in volume. I think it's closer to $20,000 for people buying a single piece of equipment.

This $20,000 piece of equipment has no better than a 1.5 percent measurement accuracy on an efficiency measurement as we're trying to specify here.

So the best piece of equipment that we are able to find commercially available to verify these efficiency levels of 95 percent that you're looking for has a 1.5 percent accuracy.

The more typical piece of equipment, and I'm pointing out here the piece of equipment that was called out in the PIER study, the Voltech 3000, has poorer than a 5 percent accuracy.

So you're talking about trying to specify a 95 percent efficiency, verifying with equipment that has a potential 5 percent error rate.

When it was 96 percent proposal you could actually have ballasts that put out -- you

know, you could measure to have more power out than power in, because of the accuracy of the equipment.

And this is my comment about verification to 95 percent efficiency when typical equipment only has a 5 percent accuracy.

I did have -- well, I don't know if you're -- I did have the -- I went to the Voltech website and I pulled down their manual for that piece of equipment, and I did have the calculations. There's a frequency calculation in their power, it goes something to the effect of .004 times the frequency in kilohertz plus a number of other factors. And it comes to at 120 kilohertz about a 5 percent error rate.

At the 300 kilohertz level that was -- at 250 and 300 kilohertz levels that were mentioned in the PIER report, your accuracies -- your error rates reach up to 7 to 10 percent. So you can have a 5 to 10 percent error on a 95 percent efficiency measurement with one of the most popular pieces of equipment out there.

And I suspect this may be a reason why you can see any kind of claim you want out on the internet. If you're using equipment and you don't

understand the accuracy of your equipment, you can get some very unusual results.

So, I understand this is not going to be a popular position, but this is some comments -- these metal halide systems are highly efficient systems. And something I didn't -- cost.

Now, I tried going to the internet to try to find publicly available pricing. I did not want to use our company's proprietary pricing information for this presentation. I couldn't find any.

The closest thing I found was one guy who was advertising 39 watt electronic HID ballasts for twice the price of a electromagnetic that was in the same website. That was the closest I was able to see that was apples-and-apples; the same distributor selling both electromagnetic and electronic.

Two-to-one, though, is consistent with what we consider within our company. We've heard numbers as low -- the lowest number, I think, was 1.5, and that was for some of our highest volume OEMs, some of our best customers. And sometimes as much as five times the cost of a conventional electromagnetic ballast.

Realize the ballast is probably the most expensive component in a fixture. And when you go after-market, when you go to like Granger's website, a ballast system is maybe $250. The medium power stuff is on the order of anywhere from $100 to $250.

And if you've doubled the price of that or tripled the price of that, you know, you're talking about a price premium just at the component level I think it's likely that you're going to see a $100 to $300 price increase. Or a 5 percent efficiency gain.

And, again, this is on a system that gets you four times the efficiency of a halogen source. And I'm asking if the economics of this makes sense.

So, that's my presentation. NEMA has made the position before. I am not sure it's popular within this group that we think that power density requirements in title 24 are quite appropriate for lighting. That allows the -- it allows the designer to use the mix of lighting that he likes. And by tightening up title 24 energy requirements you will drive the market to more efficient energy sources and you will save

energy.

And I question the ability to effectively save energy with a ballast efficiency standard.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Are there further questions for Mr. Erhardt?

MR. FERNSTROM: Maybe one more question. The building code applies to new buildings, and the appliance code applies to products sold for use in California that may be replacement.

So, it would seem to me that that enormous retrofit market could not be addressed by simply a change in the building code.

So how would you propose to address the energy efficiency improvement opportunity in the retrofit market, which is probably a hundred times what it is in the new construction market?

MR. ERHARDT: I will say that at NEMA we've only been discussing this some weeks now. And when I saw this on the horizon, the efficiency levels -- the other comment, the proposed efficiency levels in the formula, the ballasts that were tested in the PIER report don't meet those requirements. Only one of the four ballasts specified in that PIER report meet those

requirements.

So, the only independently verified data you have for ballasts doesn't justify the levels.

As NEMA, I think we can go back and we can talk about how we might propose specifying energy efficiency. I have some ideas; I haven't talked about it with our NEMA colleagues. And we would like the opportunity to work with the CEC to try to come up with something reasonable.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Steve.

MR. NADEL: A few comments and I'll give you an update on one bit of information that we promised to have the July workshop and then follow it up on.

(Parties speaking simultaneously.)

MR. NADEL: The previous presentation talked about an applied percent efficiency gain in the ballast, to recognize that these products are a lamp ballast interactions that resulted in more savings in terms of power connected to the -- meter.

Also, the electron ballast generally had improved lumen maintenance, so you can sometimes go with a lower wattage lamp. So you add that all

together to say therefore -- greater than -- estimating.

Obviously they are cost effective in many applications or else you wouldn't find their company and so many other companies actively marketing them, PG&E actively giving incentives. They are cost effective.

In our analysis the benefit/cost ratio is something like six or seven to one. I'll look it up in a minute. So even if our cost estimates were off by a factor of two or three, we're still talking incredibly cost effective.

The other point I'd make, and I'll pull up my slide in just a second, at the last workshop it was suggested by NEMA that we collect updated data on performance. It has been nearly two years since this proposal was first made, and it's been a stretched-out rulemaking.

We agreed to do that. We've pulled together information this summer that we could get. Went to NEMA and said, here's all the data we have, we would very much like your assistance in filling in any missing data and telling us if there are any corrections. And despite repeated inquiries if you have anything, just over a week

ago I was told, sorry, we don't have any more data.

We then went ahead and we crunched the numbers with the data we have. But we really have been trying, per NEMA's request, and per you request, to get the -- data. And unfortunately we haven't gotten good cooperation from NEMA providing any more data.

With that let me pull up the one additional slide I have. But I imagine --

MR. ERHARDT: May I comment on your comments?

MR. NADEL: -- on doing that.

MR. ERHARDT: May I make comments on the comments?

I did say I disagree with Steve that there are not any further efficiency gains to be had. There are no efficiency gains within the lamp in a system.

I was asked the question about improved lumen maintenance and improved mean lumens. It can be an improvement but you are not specifying that by specifying ballast efficiency.

If you want to talk about mean lumens, as NEMA I think we need to talk about this. And

maybe we can come up with a proposal. Because you

can have improved mean lumens. We sell systems based on improved mean lumens.

However, I have talked with our sister arm and the metal halide arm and some of these electronic ballasts have lower mean lumens. And some of these high efficiency ballasts have lower mean lumens than the conventional systems.

MR. FLAMM: So there is specification that will give us better mean lumens?

MR. ERHARDT: The problem is it's ballast lamp system compatibility. And each ballast lamp system compatibility takes over a year, more likely two, to verify.

And if you're looking at the dozens or maybe hundreds of lamp types out there, and you're looking at the ballast, all the different ballast applications, it increases the number of tests to perform and grows exponentially.

That's what's slowing down the ANSI process so much, is that every time you want to agree on a, you know, on a set of parameters that will verify proper operation, companies have to go away and do testing for at least six months to get the preliminary numbers.

And I have seen tests where a lamp

company came back with 1500 hour results after two months and said, yes, this electronic ballast looks good. And then found out that after 3000 hours out of a 20,000 hour lamp, the lamp just didn't work on the ballast anymore.

The systems are different. When you're looking at electromagnetic they've been working with these for so long, they know, okay, we have to look at sustaining voltage, we have to look at re-ignition voltage, we have to look at the phase of the pulse. These systems are very well defined. It's a voltage source, it's a (inaudible) and it's a pulse.

An electronic ballast, not giving too much away on how to design electronic ballasts, I can tell you that the transient response of the ballast is important. The feedback loop response of the ballast is important. The output impedance of the ballast is important, in addition to the open circuit. And even the pulse characteristic.

I didn't mention it, but you know, our company has a number of patents on these items, and it's not clear to me that all of these companies out there with the websites understand

about arc attachment and back arcing and some of these other phenomenon that we've seen 5000 hours

out in testing of lamps.

And these are the types of things that you need to verify when you're developing these systems.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Steve, your slide.

MR. NADEL: Yes. This is an update of the slide that was in the case study. This updated slide, I believe, is at the very back of Gary Flamm's staff report.

What this graph shows is the various little purple-pink triangles are various magnetic ballasts. The blue circles are various electronic ballasts. The dotted line was the best-fit line for the data as of early 2004 when we initially did the analysis.

What we had initially done is you had this best-fit line, and then we reduced the slope a little bit in order to, at the time, allow most of the electronic ballasts to pass.

What we've now done is we've gotten additional data points and we have a new best-fit line, higher intercept, but a more modest slope.

Still in the same general ballpark and basically the electronic ballast passes well as a few

magnetic, mostly reactor type ballasts.

So there is a little bit more data. We had hoped to have more data from NEMA, but despite repeated requests haven't gotten it. But I think we're basically in the same ballpark. Yes, maybe we can think about tweaking the equations a little bit, but I think we're around in the same ballpark.

MR. TUTT: Steve, it's Tim. Why didn't you redraw the best-fit line and propose a new equation?

MR. NADEL: This just came together the last couple of days. Got it to Gary, was it Friday or Monday, I can't remember. Just wasn't time. We also wanted to see what the discussion was going to be and whether more data's becoming available.

ASSOCIATE MEMBER ROSENFELD: Steve, I have a question. It's not important but I'm confused.

The new line is, except at the very left, is actually less efficient with the new data, the new best-fit is lower, and therefore in

the less efficient direction. Kind of significantly.

Can you -- do you know why that is?

MR. NADEL: There are a lot more products on the market and if I had to guess, and I'm guessing -- and there are people here who might have information as well -- in order to be more price competitive people, you know, some of the newer ballasts may be a little less efficient.

The initial ballasts are very high-end products often. And now we're getting lower cost products, but I imagine some of them are not quite as efficient.

Although I'd point out, look, there's a major difference between the magnetic and the electronic. And that's really what we're trying to capture here.

ASSOCIATE MEMBER ROSENFELD: Maybe Bob Erhardt actually has a comment on my question.

MR. ERHARDT: Yeah, I do have some comments. The ballasts that were tested in the PIER report do not meet the new requirement.

I calculate from what I was given this morning as your newest proposals for formulas, that your requirement at 150 watts would be a 91.6

percent efficiency. And the ballast in the PIER report had a 90.4.

The 200 watt requirement, according to

the calculation I was shown this morning, has a 92.6 requirement. The ballast in the PIER study had a .90.

And I would say that these numbers, both of these numbers fit in very well with the numbers that we realized with our NEMA survey.

The 350 watt in the PIER report did have a high efficiency; it had an efficiency of 92 percent -- 95 percent, excuse me. But the PIER testing of the 450 watt ballast only had a 92 percent efficiency and would not meet the requirements of 94.7 that was in the calculations I did this morning from the proposal.

UNIDENTIFIED SPEAKER: Those are the only ones that work.

MR. ERHARDT: And these were from the manufacturer whose ballasts didn't fail immediately.

And I will point out, these are the only numbers you have that are independently verified. And I really question if a legal rulemaking body should take commercial numbers off of websites to

write rulemaking.

These are the numbers you have, that you have funded the study to independently verify, and they do not meet these levels.

MR. NADEL: Two clarifications here. One, there is no new proposal at this point. We've given a new best-fit line. There is no new proposal, so --

MR. ERHARDT: Okay, I was given something. I had -- at breakfast this morning I was given a new piece of paper and said, --

MR. NADEL: Okay.

MR. ERHARDT: -- look, this is the new one.

MR. NADEL: Right.

MR. ERHARDT: And --

(Parties speaking simultaneously.)

MR. ERHARDT: Okay.

MR. NADEL: Right. The other thing is we had all agreed back in July that we were all going to get the best available data and do this. And we are frankly very disappointed, despite multiple requests, that NEMA has not provided any data.

And were left -- see, you're criticizing

us for only using web data, despite the fact that NEMA promised in July that we'd get data, and never supplied it. So, --

MR. ERHARDT: Yeah, it did take us

longer to put data together. The data wasn't put together until end of last month, at the meeting, at the meetings in the fall.

The problem is NEMA considers this data proprietary and unless all manufacturers agree to release the data publicly, it can't be released publicly.

NEMA is open to releasing data on a confidential basis, if that's possible. Is it possible to release it to the Commission and concerned parties and make it not public information?

PRESIDING MEMBER PFANNENSTIEL: Well, it's certainly possible. I don't know that we would be willing to use confidential data to derive standards. It would, I think, depend on some factors.

But generally, because our rulemakings and the standards that result are public, the information that goes into them tends to be public. There are exceptions to that, but that's

the general rule.

MR. ERHARDT: We had, you know, we were trying to make a decision quickly at the NEMA meetings, you know, while we were together in a meeting, and we couldn't get a consensus. But,

we'll take this back t NEMA and see if we can release this.

PRESIDING MEMBER PFANNENSTIEL: Yeah, I would encourage you to rethink that. I think it becomes very important to our standard setting.

Sir.

MR. WALERCZYK: Yes, my name is Stan Walerczyk with Lighting Wizards. I've worked very closely with Steve Nadel in the Energy Solutions group. And we did most of the research on this. So I just have a page that I'd like to go through that I think is important.

And I do agree, I think in certain ways ballast efficiency is worse than doing lamp and ballast system efficacy, in putting it that way.

But, again, one of the big benefits of electronics, like 400 watt, a magnetic ballast is going to be about 58 watts, and an electronic ballast, depending on the manufacturer, is going to range between about 15 and 25 watts. So we

have huge savings just on the wattage from the ballast.

There's actually been some new research that's confidential for some of the lamp companies that are testing a lot of these electronic

ballasts. With some of the ceramic metal halides they're getting higher efficacies than even the best T8 or T5HO systems, like close to 100 system lumens per watt. You don't get that with magnetic ballasts at all. And these are the major lamp companies testing the individual ballasts over time.

They're finding out they're actually getting higher initial lumens than with the magnetic ballast, and even much better lumen maintenance, significantly better for that.

We already talked about a lot of the ballasts have better lumen maintenance. And then there are some high frequency ballasts that will work with ceramic metal halide.

I don't see a problem with the quartz pulse start. But with some electronic ballasts with the ceramic, that might need some more time. But with the quartz pulse start I think we're going to be okay by 2008.

Last time I checked there were at least 11 manufacturers that are making electronic ballasts for quartz pulse start metal halide. I've been using electronic ballasts with HID for over five years with very few failures from certain manufacturers.

GE, on their new electronic ballast for HID, is offering a five-year warranty. I don't think GE would give a five-year warranty if they didn't think their product would hold up for that.

Even if the price is $100 more for an electronic versus a magnetic, let's say 320 to 400 watt, with our electric rates that's still a great value. Because I do spreadsheets and stuff all the time, and it works out.

And also what Gary said, if we rely just on title 24 I don't think we're going to get the volume up enough so the pricing can really come down on these electronic ballasts.

And that's it.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much. I thought Joe had a comment he was about ready to make.

MR. HOWLEY: Well, all I'm saying on the electronic ballasts, is so far we just have one

product; it's a 400 watt product. But we certainly don't have a full product family available. And that's been part of the issue is the whole range of products.

I know the ballast industry did a survey of when they thought they'd have a whole range of

products available on the street, major manufacturers, some of, you know, these -- some of the nonNEMA ballast manufacturers. And the year they were coming out with was around 2011 when they thought the entire category would have a substantial number of larger players involved in it.

Also the curves, from what I hear -- the original proposal just appears to be too high, based on all this. And it needs to come down and/or perhaps the NEMA ballast folks come back with a re-proposal. And it sounds like Bob is willing to talk to them about perhaps coming back with a different -- proposal.

Obviously this is kind of a good news/ bad news for the ballast manufacturers. Those who make electronic ballasts would like to see more electronic ballast use, but also the fixture manufacturers are very hesitant to go this way.

The big fixture manufacturers are not here right now, but, you know, they have lots of concerns about being forced down this path, and only offering these kinds of technologies.

And there's a lot of concerns about the outdoor use of these. I don't know what Stan's experience is, but I would bet mostly indoor use,

not outdoor use with electronic ballasts.

MR. WALERCZYK: And, Joe, I just wanted to go back to that. I thought your one electronic ballast was one ballast you could use with different wattage lamps, 250, 320, 350 and 400. So actually it's one ballast for four lamps, which you don't get with magnetics.

And even the advanced ballast you can run multiple lamps, so that's another advantage of electronic we don't have with magnetic.

MR. HOWLEY: Right. I think -- is 400, but you're right, it does have the capability to sense the other watt --

MR. WALERCZYK: And then going back to your question about exterior. Yes, I do have concerns about exterior, but the way that we framed it so far, it was like temperature sensitive, even in high base, you know, it's

temperature sensitive, as well, even interior applications.

But a lot of the ballast companies seem to be working getting better heat synchs and being able to go higher temperatures.

MR. HOWLEY: Yeah, we're working on it, but not ready for it. Again, that's the concern.

Everybody knows we're getting there; it's just it's a matter of timing and applications, high temperature, outdoor, things like that.

MR. WALERCZYK: Again, we started working on this over a year ago. That was going to be three years, and we thought that was going to be sufficient for the ballast companies, you know, to be able to take care of this.

MR. HOWLEY: And they're saying 2011 right now; that's what they're jointly saying across the NEMA companies.

MR. WALERCZYK: You know, it's interesting, and this is just a general comment, because a lot of times I talk to the manufacturers when they're wearing their manufacture hat, and they have a different answer when they're wearing their NEMA hat. So I just wanted to bring that up.

(Laughter.)

MR. HOWLEY: Well, the NEMA position is a consensus position that takes into account everybody's situation. An individual manufacturer may be in a position to want to push the technology along and (inaudible) into place. So it's not inconceivable that you have a different answer from an individual manufacturer versus the

NEMA consensus position.

PRESIDING MEMBER PFANNENSTIEL: Bob wanted to make --

ASSOCIATE MEMBER ROSENFELD: Bob's had his hand up for a long time.

MR. ERHARDT: Yeah, you mentioned numbers as low as 15 watts of losses. Did you independently verify this with -- and with what equipment did you use?

MR. WALERCZYK: Okay, that is basically the Delta electronic ballast that I've used for the longest amount of time, that Sylvania even verified those numbers on their testing for their 400 watt -- for their 400 watter.

MR. ERHARDT: And what type of equipment did they use?

MR. WALERCZYK: On that I'm not exactly

sure. You would know that better than I would.

MR. ERHARDT: I don't work for Sylvania, I don't --

MR. WALERCZYK: Okay.

ASSOCIATE MEMBER ROSENFELD: I'm puzzled about this side discussion. Obviously a 95 percent efficient ballast is going to dissipate 5 percent of energy losses in the ballast. I mean

that seems to be just a restatement of efficiency. Am I missing something?

MR. ERHARDT: I've developed these products. I know what it takes to get 15 watts of losses in a 400 watt ballast. And I find that questionable.

ASSOCIATE MEMBER ROSENFELD: Oh, it's only 4 percent, yeah.

MR. ERHARDT: I find that questionable.

MR. WALERCZYK: But, again, the range, that's what I said, was between 15 and like 25 or 28, depending on the manufacturer.

MR. ERHARDT: 25, I believe.

MR. WALERCZYK: Um-hum.

PRESIDING MEMBER PFANNENSTIEL: Gary.

MR. FERNSTROM: Okay, so if I could make a couple of comments. I don't know where this

generally leads us, but I would agree with the NEMA representative that once you get above 90, 92 percent efficiency it's difficult to make these products.

And I would think that manufacturers' claims regarding them might be optimistic. And when NEMA actually gets to validating them, they would come closer to reality. And that may have something to do with the delay in getting

information.

Secondly, I disagree with NEMA about the absolute savings. I think the PG&E team and its consultants has demonstrated that there are substantial absolute savings associated with going from the garden variety magnetic ballast to electronic ballast.

MR. TUTT: I had a question which was it seems what I've picked up here, like with fluorescent electronic ballasts, the industry is moving toward this, and it just is taking some time to work out some of the different issues with these than with the fluorescent electronic ballasts.

But, in general, everyone expects the industry's moving, you're making the product,

you're thinking that you're going to make additional products that are better, more widespread and so forth --

MR. ERHARDT: And the gaps between the products will shrink. The price of copper and steel only go up. And the price of electronics will go down. And the price differences will decrease; the reliability will increase; the compatibility will be verified.

I had a question for Joe. You make a ballast that runs four different wattages. Have you verified it with all the other lamp manufacturers?

MR. HOWLEY: I don't know. That is not a product area that I have a great deal of knowledge about --

MR. ERHARDT: I can tell you that we put on the market --

(Parties speaking simultaneously.)

MR. ERHARDT: -- before we finish our compatibility testing with the lamp manufacturers. We take the risk for that. And we think we've been doing this long enough, we've put enough time into our product and we have confidence in it.

But we also know the problems we've had

along the way in verifying lifetime with lamps.

MR. TUTT: The question I was getting to, Robert, was the proposed standard has, I believe, 2008 and '9 for -- and I think we've talked today about looking at the equation with the new data and so on and so forth.

My question is, and has been for a long time, is are the categories right. Is it 150 to 200, and then 200 to 500 in terms of availability? Is there some issue between indoor versus outdoor,

where outdoor is harder? Those could be -- further or something of the sort.

We've been looking for some discussion and input as to whether or not we can set these standards up in phases that make more sense from NEMA's perspective. And I think so far what we have is these two fairly broad categories that I'm not convinced necessarily are the best we can do. And I'm wondering about that.

MR. ERHARDT: I can tell you there is a very real difference in temperature ranges in the products. There is a component in all electronic ballasts, an electrolytic capacitor that determines lifetime.

And in my report I gave some numbers of

electrolytic capacitor absolute temperatures that must be maintained to get lifetime.

The temperatures allowed on the ballast are probably 20 to 30 degrees Centigrade lower on electronic ballasts than they are on an electromagnetic ballast.

So when you have high temperature applications you're going to have an issue with trying to retrofit them with electronic ballasts.

And the other part is -- and part of it

goes back to the lamp companies. The ballast companies can only do so much to develop product, but it's the lamp companies that need to verify the product.

I can tell you that five years ago I submitted a proposal to ANSI to change the pulse width requirements for an electronic HID ballast. And I still don't have a resolution for it. I sent ballasts to all the lamp companies. And some did testing, some didn't. We still don't have a resolution on it.

Some of it is just where's the priority in getting these systems verified. And that's out of our control. And I think that's one of the bigger issues is that right now when you sell a

system and it says use an M59 or an M102 lamp, you can open up a number of catalogues and buy an M102 lamp from a number of manufacturers. And those manufacturers warrant their lamps on that system as long as the ballast meets the ANSI requirements for M102.

There are no requirements for the electronic ballasts. So when the customer has to replace his lamp, he's going to call the ballast company, he's going to call the lamp company. Some may or may not approve their operation on the

ballast. And it's a very difficult, time consuming process to get these approvals in place.

MR. WALERCZYK: One thing about the temperature, and temperature is a big issue. I mean, I've written eight articles on high -- and temperatures. Most of the electronic ballast companies, including Advance, you know, work very hard to make sure you can use these in higher temperature.

Halothane right now is the lowest at about 104 degree Fahrenheit. They're going to be bumping theirs up so you can use all of these electronics in higher temperatures. And they're work -- all the manufacturers are working on that

big time.

GE actually put theirs in a special ballast cover to make sure that it has good heat dissipation. So by 2008 I think, you know, those issues will be much, even better than they are now.

MR. ERHARDT: But should you be writing legislation on things that you think can happen? I mean you've just spent two-thirds of the morning talking about availability of existing products. And whether -- you know, look at all the time

you've put into just going from probe start to pulse start and getting hung up on availability of a couple of lamp types.

That is so easy compared to what you're talking about with electronic ballasts. It's a couple orders of magnitude difference in the complexity.

MR. HOWLEY: You're really into a new emerging technology that is emerging. I think the real question before you is one of timing. When will this be available and what kind of proof do you need to see that it's available and it's robust.

And I think what you're seeing is that

you don't have that evidence right now, that this technology is ready to go today. And you have guesses on when it might go in the future. And this might be an area you really consider revisiting a couple years hence once this thing is more fully developed.

In the meantime I think NEMA, as Bob said, we'll go back and take a look at this and see if there's anything that might make sense to regulate now in this area, you know, exempting perhaps a whole bunch of categories that you're uncomfortable with. But perhaps there's a

category or two that might make sense.

And that might be the other alternative, just to go slow, pick a category or two, and a wattage or two. That might make sense rather than trying to grab the entire category of a still developing area. And I think that's what's so difficult here in trying to regulate this.

If you maybe break it down to something smaller, or wait longer and see what develops, this might be an even easier conversation.

MR. FERNSTROM: I thought I heard Stan just say that he's been using these kind of products for five years, and has had pretty good

luck with them.

PRESIDING MEMBER PFANNENSTIEL: Art, did you have a question?

ASSOCIATE MEMBER ROSENFELD: My question was a sort of trivial one. It doesn't help this major problem at all. But I was concerned with your statement that we're trying to specify efficiencies to a few percent when the test procedures or the equipment that's out there only seems to measure to plus or minus 5 percent or so.

MR. ERHARDT: Yes.

ASSOCIATE MEMBER ROSENFELD: Leaving out

the big issue for a moment, I mean is this a case of defining test procedures better? Or how do we get around that problem?

MR. ERHARDT: Well, like I say, the equipment we use, and we've been working on these products for many years, and we are always looking for the next best piece of equipment, the piece of equipment we use has about a 1.5 percent accuracy at the 120 kilohertz level that our high frequency ballasts operate at.

My comment is that this is, you know, it's a $20,000 piece of equipment. We buy them, but I'm not sure that all of the ballast

manufacturers buy them.

And as an example that was the piece of test equipment called out in the PIER report from Lawrence Laboratories. Now an organization as prestigious as that uses that piece of equipment, what kind of equipment are being used by these ballast companies claiming 98 percent efficiency? That's my question.

And you're going to need to -- and also, when you're operating at these frequencies, the test setup is very critical. You have parasitics, you have common mode voltages. I had one person tell me, well, he can't connect up the input and

the output at the same time because it disrupts the operation of the ballast. Well, then you're not getting an accurate measurement.

And, as a matter of fact, I specify in my procedures that you start taking the input power measurement, and then you connect the output. And if the input power measurement changes, you don't have an accurate measurement because that's the nature of these things when -- as soon as you hook up some tens of (inaudible) of parasitic capacitance, you develop some common mode currents that can disrupt your control

circuitry. And this is all layout related.

These are difficult measurements to make, and they take a lot of experience to do them well. And it will be very difficult to specify, and very difficult to verify.

Like I say, the best equipment has a 1.2 percent on the output, and another .1 or .2 on the input percent accuracy. And, you know, you want to compare a 92 percent efficient product with a 94 percent efficient product. And you've got the best equipment has, you know, probably at least 1.5 to 2 percent measurement error by the time you put everything together.

MR. FERNSTROM: So is your major issue with the level of efficiency that's specified given the measurement issues and so on, the high level of efficiency and the tolerance around it? Or is it in principle with electronic ballasts in general?

MR. ERHARDT: Yes, both. I've lived through and worked through the bad old days of fluorescent --

ASSOCIATE MEMBER ROSENFELD: Excuse me just one second. I was trying to do arithmetic -- would you mind just asking your question again,

Gary? And slap my wrist.

MR. FERNSTROM: Sure. My question was whether NEMA's issue had to do mostly with the high level of efficiency that we are proposing, or with electronic ballasts in general. And the answer was both.

MR. ERHARDT: Yeah, and I guess I will comment the high level of efficiency you're specifying, I think has not been justified by independent test data. I think it should be.

If you are going to go forward with trying to specify electronic ballasts through high efficiency, I think that further independent test -- the only independent test verification you

have, and you have funded it, the California Energy Commission funded this PIER report, says that these systems don't meet the requirements. That's the only independent data you have.

I think you should have independent test data if you're going to write regulation for these levels.

MR. FERNSTROM: Okay, so we got the message about the high efficiency level. And to some extent I agree with you.

However, I continue to believe that

electronic ballasts in general, given a little flexibility about their specific very high efficiency level, are out there. They're beginning to perform very well. Stan has good experience with them. And they're significantly better than the run-of-the-mill magnetic ballasts.

MR. ERHARDT: Okay, but is that -- that's not in -- if you talk about lumen maintenance, I agree. We have test data, and I believe Delta does, as well. Our ballast is quite similar to a Delta ballast.

There are ballasts that have significantly better mean lumens. And if you look at mean lumens for a properly designed electronic

ballast, yes, you can probably get 20 percent efficiency improvement.

MR. FERNSTROM: Okay, well, let me just --

PRESIDING MEMBER PFANNENSTIEL: Gary, I'm going to interrupt just for a second. I think this discussion is good, but I'm going to suggest that if we're going to continue it, it's 1:00 now, we're going to break and come back at 2:00 and continue.

If people are able to wrap this up I

think in the next 15 minutes or so, then we'll continue. I think a lot of the discussion that's going on here has been valuable to our understanding of both the content of each other's positions, and say the policy of each other's positions.

I think some of this can and needs to be put in writing to inform us. I think we get into additional proposals. But I think that what I'm continually hearing is that there is a lack of data that NEMA is willing to rely on. There's an understanding on the part of PG&E and some of the other consultants and the consultants on what actually is available.

I'm not sure we're going to resolve that

question here and now. I think that the Committee has heard, and I believe we understand what the differences are.

So, I'd really ask both of you whether this is something that can be brought to a close for the purposes of where Art and I are on this Committee, shortly, or should we continue this for another hour after lunch?

MR. FERNSTROM: I just had one more 30-second comment.

PRESIDING MEMBER PFANNENSTIEL: Well, then your comments are leading back to responses, so --

MR. ERHARDT: I think I can just make one more 30-second comment, as well.

(Laughter.)

MR. HARDING: I have to ask some questions about the proposal that was in the draft that came out that Gary Flamm referred to initially.

PRESIDING MEMBER PFANNENSTIEL: I'm sorry, sir, you need to get to a microphone --

MR. HARDING: I'm sorry.

PRESIDING MEMBER PFANNENSTIEL: -- and identify yourself.

MR. HARDING: I'm Tom Harding, Venture Lighting. And I know, I've heard all the discussions, but there is a proposal in writing that came out in the draft standard report that we just got Monday. And I still have some questions.

Gary referred to the fact that one of the equations might be wrong --

PRESIDING MEMBER PFANNENSTIEL: Okay, well, I guess the only question right now --

MR. HARDING: -- and so I have some

issues with that.

PRESIDING MEMBER PFANNENSTIEL: -- that I have is how long we take for a lunch break.

ASSOCIATE MEMBER ROSENFELD: I have a thought. We don't probably need a very formal lunch. There is a cafeteria -- I'm sorry, there is a snack shop. One possibility would be we just take 15 minutes, go buy ourselves salads and sandwiches.

PRESIDING MEMBER PFANNENSTIEL: I think if people want to continue this, then we probably should go ahead and allow. I had understood that we were going to wrap this up before 1:00. It's 1:00 and we seem to be quite a ways from there.

MR. TUTT: Commissioner Pfannenstiel.

PRESIDING MEMBER PFANNENSTIEL: And --

one second -- and I think we also need to have, allow ourselves some time to talk about next steps,I think that's really important to us, before we conclude today.

Tim, and then --

MR. TUTT: I guess what I was hearing was there probably was about 15 minutes worth or less or stuff to go through. And so I'm just wondering --

PRESIDING MEMBER PFANNENSTIEL: But we heard that a long time ago. And I'm not sure that's --

MR. TUTT: I understand.

PRESIDING MEMBER PFANNENSTIEL: -- anybody can quite hold themselves to that standard. Bill.

MR. PENNINGTON: It seems like some of this dialogue could be offline, including the question about is there an error in the equations, could be resolved offline. We don't really need to have a lot of public debate about that.

So, --

PRESIDING MEMBER PFANNENSTIEL: I think that there are things that need to be on the record, they probably need to get on the record

here if that's what the question is.

What do we think? Do we think we can wrap it up in 15 minutes?

MR. FERNSTROM: I've got 30 seconds.

MR. ERHARDT: I can make a comment in 30 seconds.

PRESIDING MEMBER PFANNENSTIEL: And then we still have the gentleman who asked to be heard.

MR. PENNINGTON: How much time does he need?

MR. HARDING: Well, I need two minutes; it depends --

PRESIDING MEMBER PFANNENSTIEL: All right, well, let me -- and then, Gary, we're going to talk about some next steps. Yes.

All right, let's continue right now. We're going to break at 1:15 for lunch or to adjourn.

MR. FERNSTROM: Okay, so for my 30 seconds, with respect to the efficacy or efficiency improvement with electronic ballasts, all of the California utilities have gone to a mean lumen basis of determining the savings from their programs.

So mean lumens is very important to us.

MR. ERHARDT: And my comment is that, yes, electronic ballasts can produce an increase in mean lumens that will have a significant effect on system efficacy looking at mean lumens, but the way the proposal is specified right now will not guarantee that you will be seeing increases in mean lumens.

ASSOCIATE MEMBER ROSENFELD: Sorry to be

holding up Gary's 13 seconds left, but do I understand that this makes for complexity because your ballast will give different mean lumen gains with lamps that are manufactured by different manufacturers? I mean are we getting into a combinatorial problem here?

MR. ERHARDT: I'm sorry? I don't understand the question.

ASSOCIATE MEMBER ROSENFELD: I thought somebody said that the problem is that you get different mean lumen gains. Take a 400 watt ballast and a 400 watt lamp, that you're going to get different lumen outputs depending on which lamp goes with the ballast.

MR. ERHARDT: Yeah. The way you ignite the lamp, the way you bring a lamp through its glow to arc transition, the way you -- the crest

factor of the wave form, there are a number of factors that vary from ballast to ballast. And these will affect mean lumens.

And some ballasts do different things better than others. And just looking at efficiency, efficiency is not the driving factor for improved mean lumens.

PRESIDING MEMBER PFANNENSTIEL: Thank

you. Sir.

MR. HARDING: Tom Harding from Venture again. I agree with Bob, and the question about mean lumens. The issue is that yes, it may make a difference on whose ballast design you use. It may make a difference on whose lamp design you use. Those things haven't been, by the industry, all brought together yet.

Part of the ANSI work is aimed at finding that compatibility. What the features of the lamp and ballast that make them give consistent performance. And that hasn't been worked out.

There's certainly good documented cases of improvement. There are also documented cases where it didn't make any difference, or maybe even hurt them.

So that's still ongoing as a feature.

But the other thing I wanted to talk about was because that proposal just came out, had two separate equations -- Gary, you referred to the fact that one of those might be incorrect in the --

MR. FLAMM: Both of them are incorrect.

MR. HARDING: Oh, both of them are

incorrect, yes.

(Laughter.)

MR. HARDING: That makes it much easier.

MR. FLAMM: Yes.

MR. HARDING: I wanted to get that just clarified even though we may go on and provide new data.

MR. FLAMM: Right, it's --

MR. HARDING: I still wanted to understand that equation up there.

MR. FLAMM: Right. Just for the record I'll read it and then you can copy it down later. It's .0002 --

ASSOCIATE MEMBER ROSENFELD: Which are the two?

MR. FLAMM: Both the last two lines of the table are identical equations. It's just that the time effective date is different for the

different wattages. But both of them should .0002 times the lamp watts. That set times 0.864.

MR. HARDING: That's the original equation.

MR. FLAMM: That's the original equation --

MR. NADEL: As I understand it, the

proposal has not changed. We did just a day or two ago get this new best-fit line; there's no new proposal at this point in time.

MR. HARDING: Okay, so it's still .864 and the slope is 02.

The other question, that blue line up there that you showed as the best fit will (inaudible) a little bit, mainly because most best-fit lines don't have all the points above it.

MR. NADEL: No, this is the new data. And it was addressed briefly in the staff report. What you don't see is sometimes we have overlap of data points. There could be -- one of those points could represent many products.

MR. HARDING: Oh, it could be 100 products. But if there's no points below the line, it's hard to say that's the best fit.

MR. NADEL: But data set, and we gave a copy of the data set awhile ago to NEMA. So you

have it, as well. But that's what it's driving at.

MR. HARDING: Just curious.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

ASSOCIATE MEMBER ROSENFELD: Steve, he's

got me concerned. There's just very few points (inaudible).

MR. NADEL: I will double check when I check with staff. They said, yeah, there's quite a bit of overlap. There's certain common products, I think, you know, particularly like at the 400 watt level, where you have a certain nice round efficiency, and there's just lots and lots of products.

PRESIDING MEMBER PFANNENSTIEL: Gary.

MR. FLAMM: I would like to ask Bill Pennington to outline where we might go from here as far as a timeline.

MR. PENNINGTON: So, from what I heard today, I think we are ready to put out 45-day language. And I think we can make some calls here on, you know, to get that started, to get the proceeding started.

I think there's some information that we

need to take another look at related to the energy savings. The option of looking at the 40 watt incandescent. We need to understand kind of what the energy savings implications of that are.

Also the slope of the line. What does 1 percent difference in the slope of the line for

incandescents mean in terms of models. So I think that we should ask our consultants and the industry for some information about that. And we would need to get that back pretty quickly.

We would need to prepare the filing documents to get this to OAL. And then OAL takes a review time to respond to that, review our filing documents, and approve our putting out a notice.

I think we could put out a notice of proposed action in early December if we moved along here.

PRESIDING MEMBER PFANNENSTIEL: Steve, you had a question?

MR. NADEL: Tying in what Bill just said to the earlier discussion, a critical path item is going to be well, if we can get some more data from NEMA on ballast performance. And, Bob, I don't know if you can give us some time schedule there.

MR. ERHARDT: I will bring it up with NEMA over the next days and --

PRESIDING MEMBER PFANNENSTIEL: May I suggest, I think that there's a fair, and Bill referenced the fact, that there's some additional

information we need and that we look for both from NEMA and from our consultants, data and analysis.

I'm not sure that we can, right now, go all through all of that. But clearly, you know, that's a critical path item. We need to figure out what additional data we need, and where we can get it, and what we can do if we can't get it.

Steve.

MR. NADEL: Yeah, in this case, as I understand it, NEMA had compiled it in response to the July workshop. They have it in journal; it's just a question of getting them to release it.

PRESIDING MEMBER PFANNENSTIEL: We understand.

MR. NADEL: Yes.

PRESIDING MEMBER PFANNENSTIEL: Joe.

MR. HOWLEY: Just to be practical, it's getting to be close to the end of October here. And it probably is going to take industry, you know, at least till Thanksgiving or the early part

of November to discuss this, to try to get our perspective views together. So, --

PRESIDING MEMBER PFANNENSTIEL: Is that the specific question about the electronic ballast information? Is that what you're --

MR. HOWLEY: Well, I was looking at everything in total, I think. But, for the (inaudible) issue, you know, this could be a couple week thing. The last time we tried to do this we didn't do it in a day. The NEMA proposal took a couple of months to come up with a consensus between all these 13 people.

So this isn't exactly something -- what you're dealing with here, we deal with in many sessions internally in our own sections. So it's impractical to think that we are going to come to a conclusion in a day or two.

But perhaps sometime in November, you know, as soon as we get consensus, of course, we'll pass that information on. But, trying to be practical with time here. It's probably going to take the month of November.

MR. PENNINGTON: I think we've gotten enough information from the industry, at least in terms of general positions. And the only information we need really is what Steve was

talking about from industry.

PRESIDING MEMBER PFANNENSTIEL: So we'll move forward on the parts we can. I think if the question really is the electronic ballast

information, the data that apparently exists, but there needs to be some policy resolution to release it to us. And I'm not sure that that policy, that getting the policy on that should take, well, you need to tell us, but I mean it seems like it's a fairly narrow question that we're now focusing on.

MR. HOWLEY: In terms of getting the information.

PRESIDING MEMBER PFANNENSTIEL: Yes. There should be, you know, offline kinds of exchanges of information, I think, that we understand.

MR. HOWLEY: Okay. Well, also on the (inaudible) issue we did promise to look into issues and get back to the Commissioners on, and that's the 40 watt question and the (inaudible) question, so we will look at those two and at least give you our positions after looking at them.

PRESIDING MEMBER PFANNENSTIEL: That's

good. And then anything else. There were a number of other areas that came up in the course of the day where probably we'd like some of your opinion or position, or additional information.

So, was that it, Bill? Was that in terms of the schedule?

MR. PENNINGTON: Yes.

PRESIDING MEMBER PFANNENSTIEL: Steve.

MR. NADEL: Regarding the ballast data, in case we need to have actually a three-way discussion involving NEMA, the PG&E team and the CEC, who should we be working with at the CEC? Is that Bill? I'm just trying to move this along.

PRESIDING MEMBER PFANNENSTIEL: I think it's Gary.

MR. FLAMM: Myself.

MR. NADEL: Oh, it would be Gary, okay. Great.

PRESIDING MEMBER PFANNENSTIEL: Are there other comments? Are there other issues? I think that we've covered an incredible amount in the last few hours, but you never get it all.

So, other --

ASSOCIATE MEMBER ROSENFELD: Jackie, I have --

PRESIDING MEMBER PFANNENSTIEL: Yes.

ASSOCIATE MEMBER ROSENFELD: -- a really truly a question, but on the 40 watt lamp, quote, exemption, or fooling around with the lines or

whatever, are we going to get two different estimates of what energy impact that might be? Are we going to get one from NEMA and one from one of the other consultants?

I'm just not quite sure who's responsible for educating us on that.

MR. HOWLEY: NEMA could certainly put an estimate together --

UNIDENTIFIED SPEAKER: Is your microphone on?

MR. HOWLEY: Yes. NEMA could put an estimate together on that, but I'm sure Chris will probably provide an estimate, as well, -- too far off --

MR. CALWELL: Yeah, I would welcome, too, actually. And it's for the reasons you heard before, the bins of data that we have are not going to precisely line up with these, and it would be interesting to see what the differences are.

So, would it be fair to summarize that the intent would be to list the unit sales of

lamps that occur between 35 and 57 watts, right. Because 57 is the lower bound of the NEMA proposal right now. 35 is the lower bound of the revised

PG&E proposals. There's that range in between.

And then what would expect the energy use and energy savings associated with that range to be, if they were included or not.

ASSOCIATE MEMBER ROSENFELD: But, Chris, there is still this point about which -- you remember, I went up -- the wrong slide -- I went up to the board. There are a few models which don't even -- which aren't even allowed under tier I. And so those shouldn't muddy up -- no one is proposing to make those legal, as far as I know, right?

MR. CALWELL: Right. So we're looking at the remaining models. And that, in effect, makes it even more important to get some NEMA estimates, because all we've got are overall sales. We can't exclude the tier I, but they might have a sense of what they're sales of the tier I models are.

ASSOCIATE MEMBER ROSENFELD: Good. Thank you.

PRESIDING MEMBER PFANNENSTIEL: Anything else? So, we're set.

Thank you, all. Thank you for bearing with us trying to wrap this up. But it was really, I think, a very very useful day.

We'll be adjourned.

(Whereupon, at 1:16 p.m., the Committee workshop was adjourned.)

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CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Committee Workshop; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said workshop, nor in any way interested in outcome of said workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 10th day of November, 2005.